SEG

CT 1536/39
CT 2051/39

Service Manual

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CAUTION
Before servicing the chassis, read the "Safety Precaution", "X-Ray Radiation Precaution" and "Product Safety Notice" on Page 2 of this manual."

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The normal value of the high voltage of this receiver is 30 KV at zero beam current (minimum brightness) under 220V AC power source. The high voltage must not, under any circumstances, exceed 30 KV.
2. Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
3. The primary source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
4. Some parts in this receiver have special safety — related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

WARNING: Service should not be attempted by anyone unfamiliar with the necessary precautions on this receiver.

The following are the necessary precautions to be observed before servicing this chassis.

1. Since the power supply circuit of this receiver is directly connected to the AC power line, an isolation transformer should be used during any dynamic service to avoid possible shock hazard.
2. Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled. Use shatter proof goggles and keep picture tube away from the unprotected body while handling.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as; non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
4. When replacing parts or circuit boards, disconnect the power cord.
5. When replacing a high wattage resistor (oxide metal film resistor) on circuit board, keep the resistor 10 mm (1/2 in.) away from circuit board.
6. Connection wires must be kept away from components with high voltage or high temperature.
7. If any fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.
8. The receiver is designed to operate with 220V (50Hz) AC mains.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements electrical components having such features are marked with "⚠" on the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, X-RAY RADIATION or other hazards.

OPERATING CONTROLS

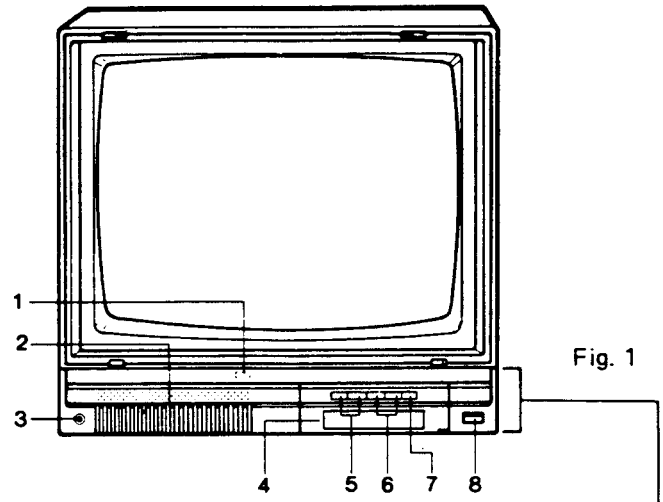


Fig. 1

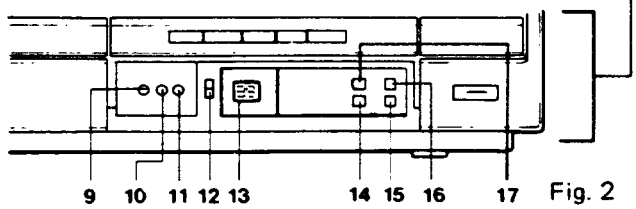


Fig. 2

1. Infrared Remote Sensor
2. Speaker
3. Earphone Jack
4. Channel Preset Door
5. Volume Control Buttons (UP/DOWN)
6. Channel Selector Buttons (UP/DOWN)
7. Sub-Power On/Off Buttons
8. Main Power Switch
9. Brightness Control
10. Contrast Control
11. Colour Control
12. AFC Switch
13. Digital Channel Indicator
14. Band Selector Key
15. Search Down Key
16. Search Up Key
17. Store Key
18. Antenna Terminal (75 Ω)
19. Indoor Antenna
20. Antenna Mounting Socket
21. Antenna Plug (300 Ω – 75 Ω)
22. AC Mains lead.

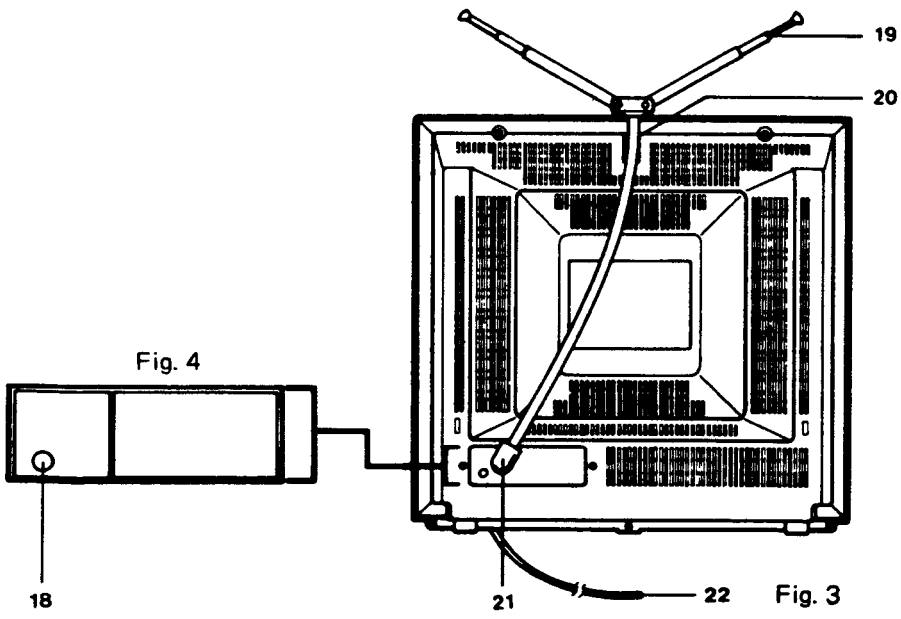


Fig. 4

Fig. 3

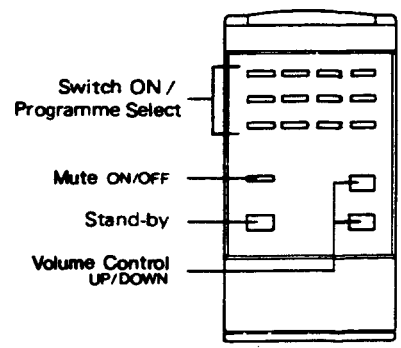


Fig. 4

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CABINET BACK REMOVAL (See Figure 5)

1. Disconnect the antenna leads from the antenna termianls.
2. Remove 5 screws (B) securing the Cabinet Back to the Cabinet Front and detach the cabinet back.

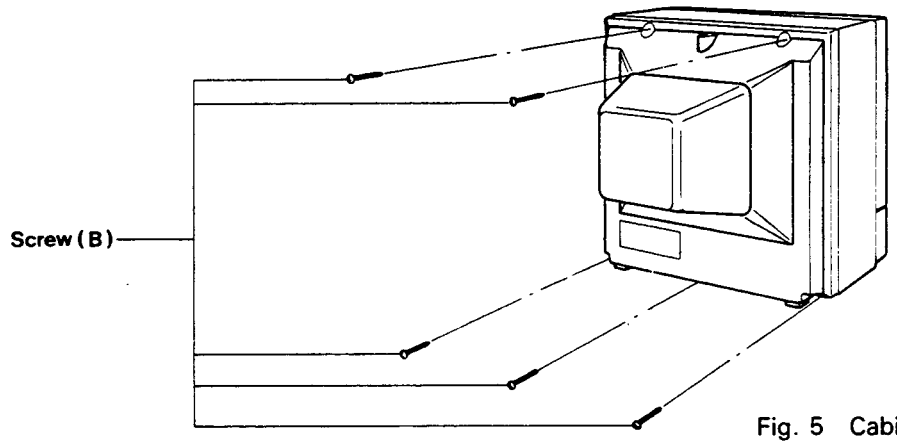


Fig. 5 Cabinet Back Removal

CHASSIS REMOVAL (See Sigure 6)

Following the steps under Cabinet Back Removal, proceed as follows:-

1. Unplug the CRT grounding wire socket connected to the CRT Socket Board.
2. Detach the picture tube anode cap.

Notice: Certainly dischange the high potential of the picture tube anode to the receiver chassis before removing the anode cap.

3. Detach the CRT Socket (CRT Socket Board).
4. Remove 3 screws securing the Control Board to the Cabinet Front.
5. Take out the chassis from the chassis holder.

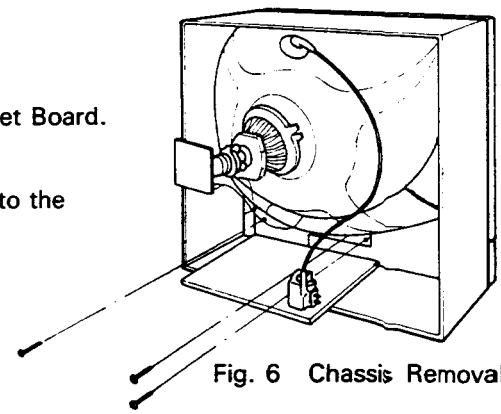


Fig. 6 Chassis Removal

PICTURE TUBE REMOVAL (See Figure 7)

Following the steps under CHASSIS REMOVAL proceed as follows:

1. Place the cabinet with the front down on a rolled pad or some suitable cushion placed near the top edge of the front panel.
2. Remove 4 nuts securing the picture tube to the cabinet, and detach the CRT with the degaussing coil, then grasp the face plate edge of the picture tube with both hands and take out the picture tube.
3. Detach the CRT grounding wire which is attached to the picture tube lugs with spring.

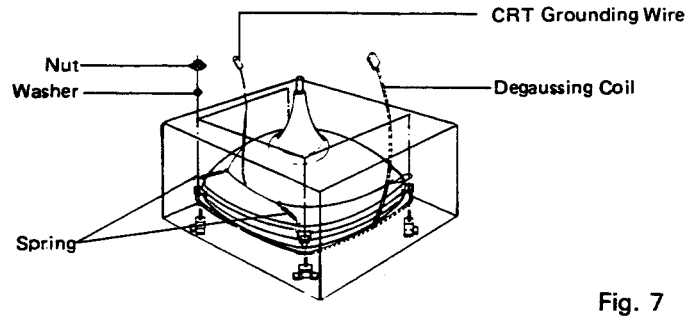


Fig. 7

GENERAL ADJUSTMENT INSTRUCTION

This receiver is transistorized and special care should be taken when servicing. Read the following matters that demand special attention before attempting adjustment.

1. Adjustment requires an exact procedure and should be undertaken only when necessary.
2. An isolation transformer should be used during any dynamic service to avoid possible shock hazard.
3. The test equipment specified or its equivalent is required to perform the alignment properly. Use of equipment which does not meet these requirements may result in improper alignment.
4. Correct matching of the equipment is essential. Failure to use proper matching will result in responses which can not represent the ture operation of the receiver.
5. The AC power line voltage should be kept 215 to 225 volts 50 Hz during alignment.
6. Do not attempt to connect or disconnect any wire while the receiver is in operation. Make sure the power cord is disconnected before replacing parts in the receiver.
7. Switch on the TV receiver and set AFC switch at "OFF" position. Adjust the controls for optimum picture and then set AFC switch at "ON" position.
8. Unless otherwise noted, do not perform any adjustment until the receiver has been turned on for at least 10 minutes.

I. Picture and Sound I.F. Adjustment

Test Equipment:

1. AM/FM signal generator (4.5MHz—6.5MHz)
2. Sweep /Marker signal operator (30MHz—60MHz)
3. Sync. oscilloscope.
4. Oscilloscope (volt sensitivity over 10 mV and input impedance over 1 M ohm, below 10PF).
5. Probe (Low capacitance)
6. High impedance electronic voltmeter on VTVM (Input impedance having 100K ohm/V at least.
7. DC power supply (Source such as a battery or a well regulated and isolated DC bias supply).

(A) 31.9MHz, 40.4MHz Traps, Picture I.F. And AFC Adjustment

(a) 31.9MHz, 40.4MHz Traps Alignments

1. Connect the signal output of sweep/marker generator to the Tp of Tuner through 1 K ohm resistor and 1000PF capacitor. (See Fig.8-a).
2. Connector the external detecting circuit bewteen the syncoscilloscope input and TP 101 (Q101 — Collector). (See Fig. 8-b).
3. Apply +16.0V DC across C319 on Main Board.
4. Tune L111 for maximum attenuation of 31.9MHz as shown in Fig.8-c .
5. Tune L112 for maximum attenuation of 40.4MHz as shown in Fig.8-c.

(b) P.I.F. Alignment:

1. Remove the external detecting circuit from Main Boand.
2. Connect the vertical input terminal of an sync oscilloscope in series with a 100K ohm resistor to TP 10 IC201 — pin 39).
3. Apply a + 8.8V DC dummy AGC bias in series to TP12 (pin 5 of IC101) through 500 ohm resistor.
4. Tune L103 and L104 alternatively to obtain a waveform as shown in Fig. 9.

(c). AFC Alignment

(1) Carry out AFC adjustment after PIF adjustment in made.

(2) Reconnect the vertical input of the sync oscilloscope with 1M ohm resistor in series to TP13 (pin 14 of IC101).

(3) Adjust L105 for the AFC waveform as shown in Fig. 10.

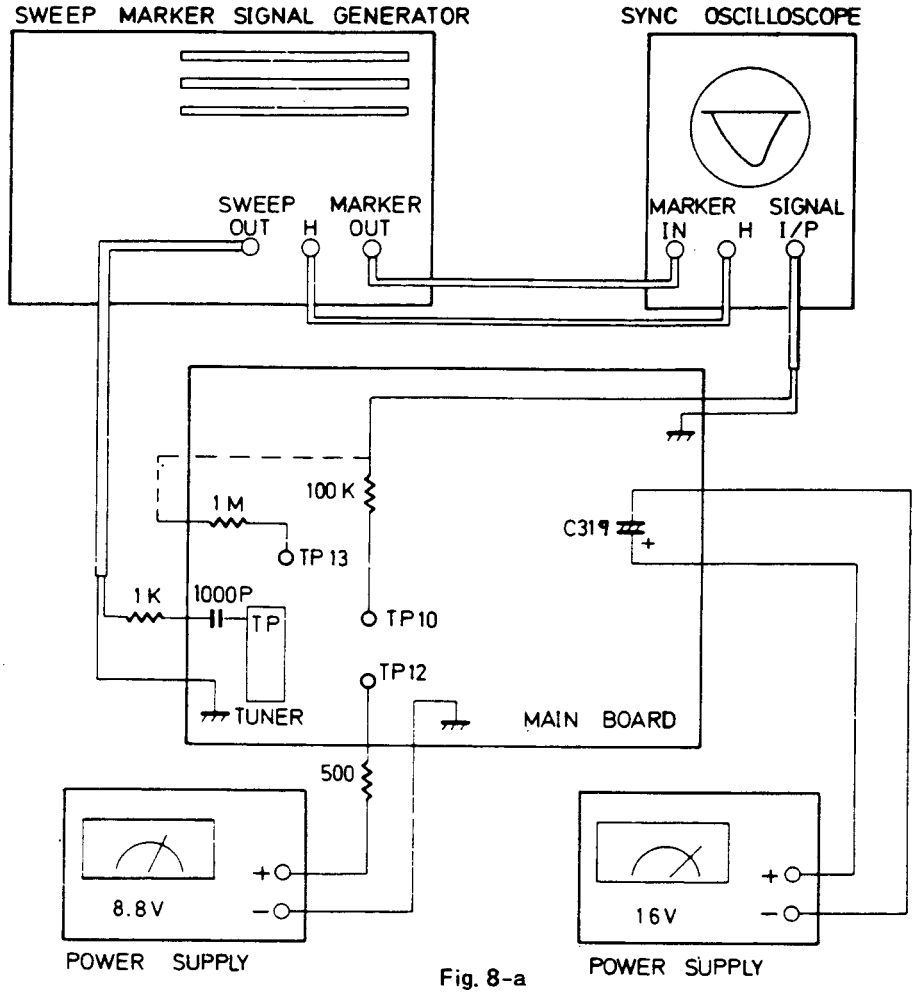


Fig. 8-a

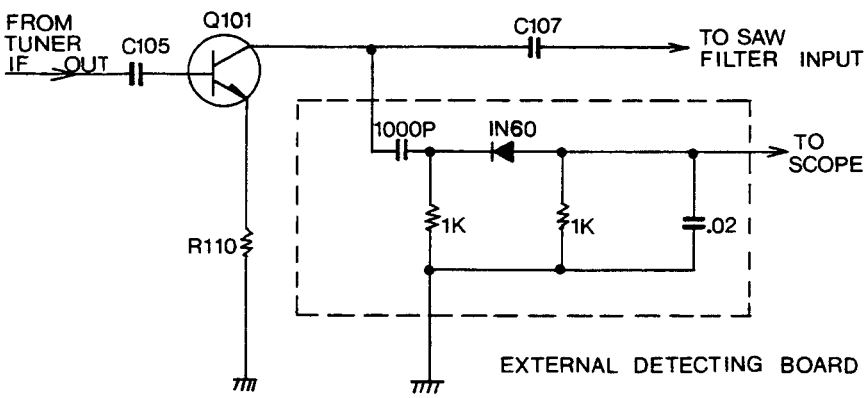


Fig.8-b

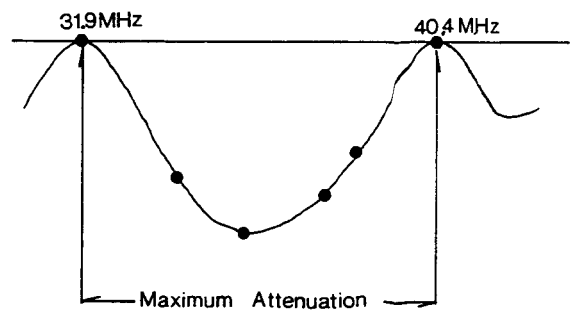


Fig.8-c 31.9, 40.4MHz Traps Response Curve

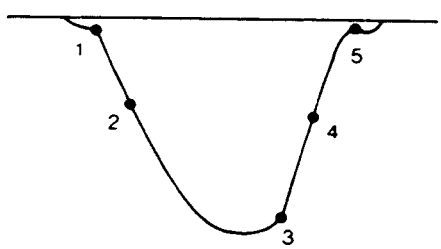


Fig. 9 P.I.F. Response Curve

P. I. F. RESPONSE

NO.	B/G	dB
1	33.4 MHz	−20 −26
2	34.47 MHz	−6 ± 1
3	37.9 MHz	0
4	38.9 MHz	−6 ± 1
5	40.4 MHz	> − 40

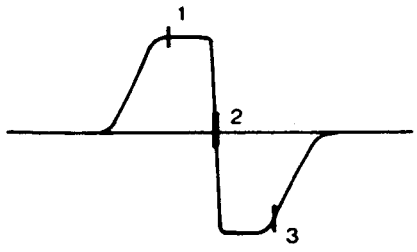


Fig. 10 AFC Response Curve

AFC RESPONSE

NO.	B/G	dB
1 2	37.9 MHz	+
2	38.9 MHz	0
3	40.4 MHz	−

(B) S.I.F. Alignment

(1) The signal at AM/FM signal generator which is set at SIF Frequency (5.5 MHz for B/G system) with AF 400Hz, 30% FM modulation is applied to TP1 through a 1K ohm resistor and a 1000pf capacitor. As shown in figure 11.

(2) Short pin 5 of IC101 to ground.

(3) Connect a 30K ohm VR to pin 1 of IC101.

(4) Connect a 8 ohm dummy load across socket G pin 1, 2 in parallel with an oscilloscope and VTVM.

(5) Apply a + 16V DC across C319 and +12V DC across C611 on Main board.

(6) Adjust the 30K ohm VR for maximum undistorted output.

(7) Fine adjust L106 to obtain a maximum amplitude signal output with minimum distortion.

(8) Check the audio output level with 2W (4V) at maximum volume position.

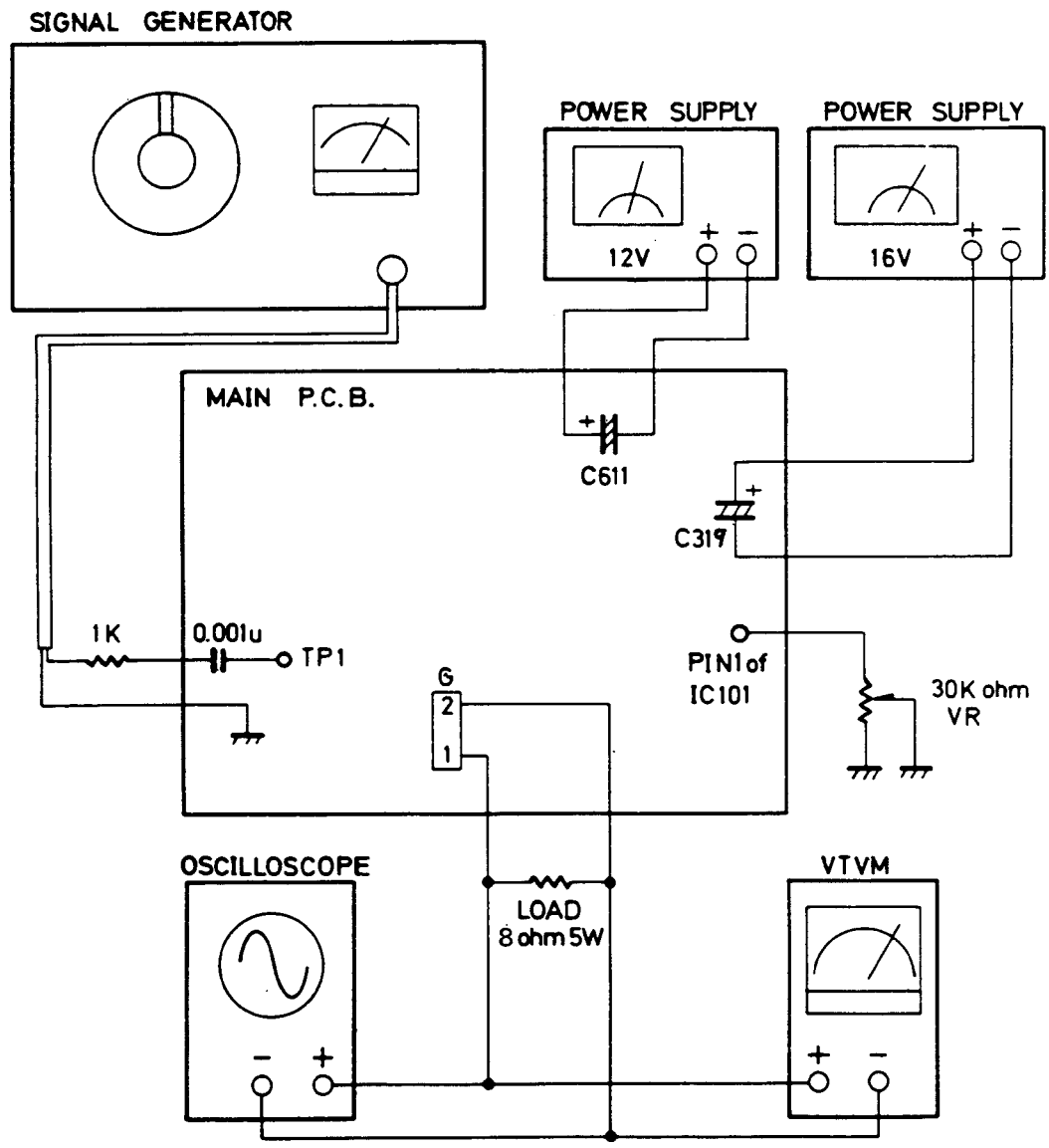


Fig. 11

II. General Adjustment

1. Automatic Degaussing

An automatic degaussing coil is attached around the picture tube, degaussing the tube properly in about one second after the set is switched on. If the receiver is moved or faced in a different direction, the power must be switched off at least 15 minutes in order that the automatic degaussing circuit operates properly. External degaussing is necessary if the automatic degaussing proves ineffective after the set is moved.

External degaussing is done by moving a degaussing coil circlewise in front of the face plate and then moving it away step by step until it is about two meters from the screen, then switch off the degaussing coil. If residual colour spots are still found on the screen, adjust the colour purity and convergence.

2. B+ (110V) adjustment

CAUTION: To avoid X-ray hazards, B + voltage must be set correctly at 110V positon.

(a). Make sure the AC power supply is 220V, 50Hz.

(b). Switch on the TV receiver, tune in an active channel.

(c). Connect test point TP11 on the main PCB to a reliable DC voltmeter.

(d). Adjust VR601 on main PCB for B + 110V voltage reading.

3. High Voltage Check

CAUTION: There is no high voltage adjustment in this chassis, B + 110V voltage directly relates to the high voltage, it must be properly adjusted to insure the correct high voltage. The high voltage does not exceed 30KV under any conditions.

(a). Connect an accurate high voltage meter to the second anode cap of the picture tube.

(b). Turn on the receiver, set Brightness and Contrast controls to minimum. (Zerobeam current)

(c). Make sure the high voltage does not exceed 30KV.

(d). No matter whether the luminance, contrast and chrominance controls are set to maximum or minimum, the high voltage must be kept under 30KV.

4. Horizontal Oscillator Adjustment

If the picture shows an unstable sync. in horizontal, adjust the VR 206 semi-variable resistor, setting it at the center of holding range.

5. Vertical Oscillator Adjustment

If the picture moves up or down on the screen, adjust the VR207 until there is a single image without vertical movement.

6. Height Adjustment

Vertical Height Control (VR208) can change the size of the picture. Make fine adjustment until the picture overscans the mask 2 mm.

7. Focusing

Receive a TV test pattern signal, adjust controls for optimum picture, Adjust Focus Control for a well-defined, sharpest display in the centre area of the screen.

8. Delay AGC Adjustment

(a). Tune the set in the strongest station in your area.

(b). Turn AGC Delay control (VR101) on Main Board to fully counterclockwise position.

(c). Adjust VR101 clockwise until noise (snow) disappears from the screen.

9. Sub-Brightness Adjustment

(a). Tune in Philips Standard Colour pattern signal.

(b). Set the Contrast, Brightness and Colour Controls to the minimum.

(c). Set the Sub-Brightness Control (VR202) to the center and warm up the set for 5 minutes.

(d). Adjust Sub-Brightness Control (VR202) until light just appears on the screen.

10. White Balance Adjustment

(a). Receive a monochrome signal and warm up the set for 15 minutes.

(b). Set the R.G.B. cut off controls (VR501, VR503, VR505) and the G.B. drive controls (VR502, VR504) at center positions.

(c). Rotate the screen control fully counterclockwise.

(d). Disconnect the luminance output terminal connector and connect TP 5 to ground with a jumper wire.

(e). Rotate the screen control gradually clockwise until the first horizontal appears on the screen.

(f). If the first horizontal is in blue, adjust VR501, VR503 to increase the red and green component level to get a white horizontal line.

(g). Remove the jumper wire and connect back the luminance output connector. Set the luminance and contrast control at normal position. Adjust VR502, VR504 to maintain a good white balance at the brightest part of the screen.

(h). Turn the brightness and contrast controls to maximum and minimum. Observe the screen white balance, if it is not proper in high brightness condition or low brightness condition, adjust R.G.B. cut off controls or G.B. drive controls in order to maintain a good white balance in both low and high luminance conditions.

11. Luminance Channel Chroma Trap

(a). Tune in a colour bar signal.

(b). The test probe of oscilloscope connects to the pin 3 of IC201 and ground.

(c). Adjust trap coil of DL201 for minimum chroma signal (4.433 MHz).

12. Colour Sync Adjustment

(a). Tune in a colour bar signal.

(b). Set the contrast control to minimum and colour control to maximum.

(c). Cut off the colour killer by connection the pin 2 and pin 12 of IC201 with 10 Kohm resistor.

(d). Short L203 to ground by Jumper wire.

(e). Adjust the colour sync. variable capacitor (C215) on the main board so that the colour bar pattern stand still or drifts slowly across the picture screen.

(f). Remove the resistor and jumper wire.

(g). Check that the colour sync. is stable with channel changing and power on-off operation. If the colour is slow to appear or the colour sync. is out of order, return the colour sync. variable capacitor (C215) for proper colour display.

13. PAL Matrix Adjustment

(a). Tune in a Philips standard colour pattern.

(b). Set the colour control at maximum position.

(c). If the PAL Matrix adjustment is incorrect, the Venetian Blind would appear in the colour bar area. Then adjustments should be made as follow:

(d). Adjust VR201 to minimize the Venetain Blind in the R-Y, B-Y Decording area.

(e). Adjust L203 & L204 alternatively to minimize the Venetain Blind in the colour bars area.

(f). Repeat (d) & (e) step until the Venetain Blind disappears.

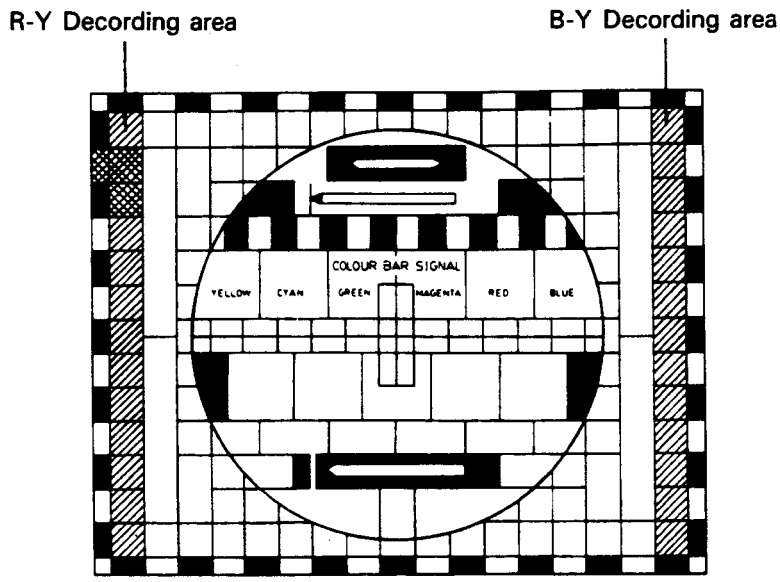


Fig. 12 Philips standard colour pattern

III. Colour Purity And Convergence Adjustment

1. Colour Purity Adjustment

NOTE: Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes.

(a). Demagnetize the picture tube and cabinet using a degaussing coil.

(b). Turn the Contrast and Brightness controls to maximum.

(c). Adjust Red and Blue Cut-off controls (VR501 and VR505) to provide only a green raster. Advance the Green Cut-of control (VR503) if necessary.

(d). Loosen the clamp screw holding the yoke backward to provide vertical green belt (Zone) in the picture screen.

(e). Remove the Rubber Wedges.

(f). Rotate and spread the tabs of the purity magnet (see fig. 13) around the neck of the picture tube until the green belt is in the center of the screen. At the same time, center the raster vertically.

(g). Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.

(h). Check the purity of the red and blue raster by adjusting the Bias controls.

(i). Obtain a white raster, referring to white balance adjustment.

(j). Proceed with convergence adjustment.

2. Convergence Magnet Assembly Positioning

Convergence magnet assembly and rubber wedges need mechanical positioning following fig. 13.

3. Center Convergence Adjustment

NOTE: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

(a). Receive crosshatch pattern with a colour bar signal generator.

(b). Adjust the Brightness and Contrast controls for well defined pattern.

(c). Adjust two tabs of the 4 Pole Magnets to change the angle between them (see fig. 14) and superimpose red and blue vertical lines in the center area of the picture screen. (see fig. 15).

(d). Turn both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the center of screen (see fig. 15).

(e). Adjust two tabs of 6 Pole Magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.

(f). Repeat adjustments 3, 4, 5, keeping in mind red, green and blue movement, because 4 Pole Magnets and 6 Pole Magnets interact and make dot movement complex.

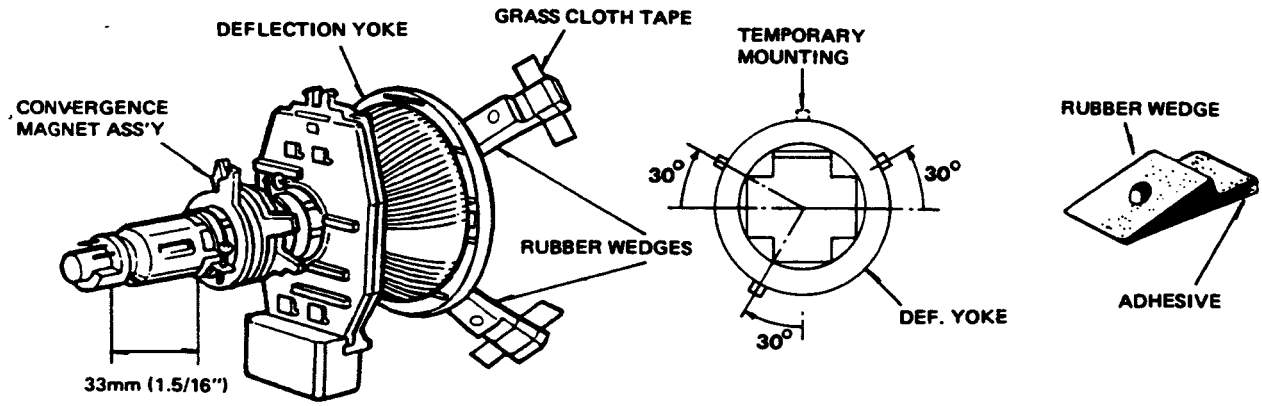


Fig. 13 RUBBER WEDGES LOCATION

4. Circumference Convergence Adjustment

NOTE: This adjustment requires Rubber Wedges and Glass Cloth Tapes.

(a). Loosen the clamping screws of deflection yoke to allow the yoke to tilt.

(b). Place a wedge as shown in figure 13 temporarily. (Do not remove cover paper on adhesive part of the wedge).

(c). Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (see fig. 15) Push the mounted wedge into the space between picture tube and the yoke to hold the yoke temporarily.

(d). Place other wedge into bottom space and remove the cover paper to stick.

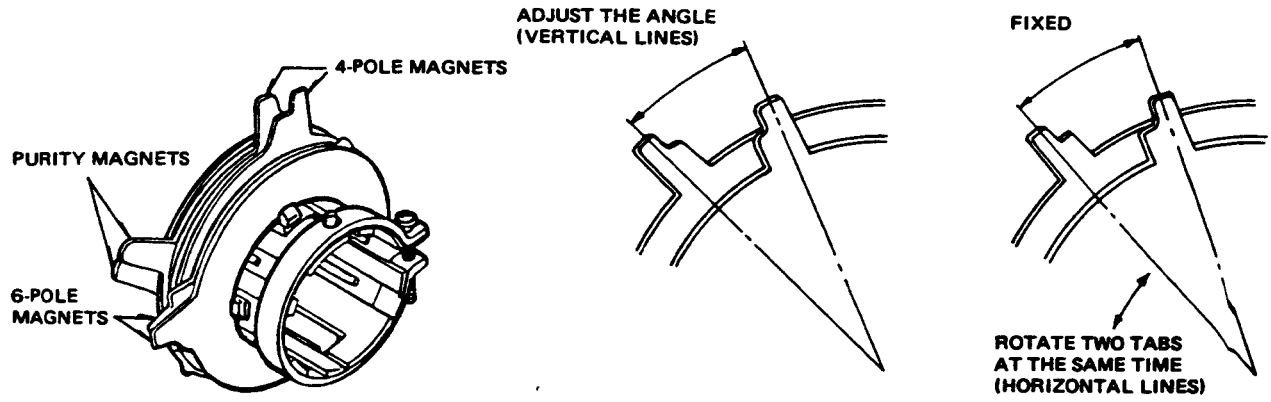
(e). Tilt front of the yoke right or left obtain better convergence in circumference. (see fig. 15)

(f). Hold the yoke position and put another wedge in either upper space, remove cover paper and stick the wedge on picture tube to hold the yoke.

(g). Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.

(h). After placing three wedges, recheck over all convergence. Tighten the screw firmly to hold the yoke tightly in place.

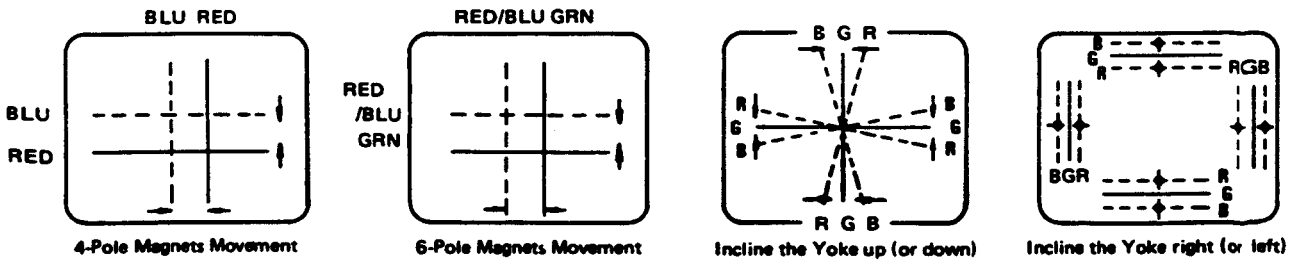
(i). Stick 3 grass cloth tapes on wedges as shown in figure 13.



CONVERGENCE MAGNET ASSEMBLY

Fig. 14

ADJUSTMENT OF MAGNETS



Center Convergence by Convergence Magents

Circumference Convergence by DEF Yoke

Fig. 15 Dot Movement Pattern

EXPLODED VIEW OF REMOTE CONTROL UNIT

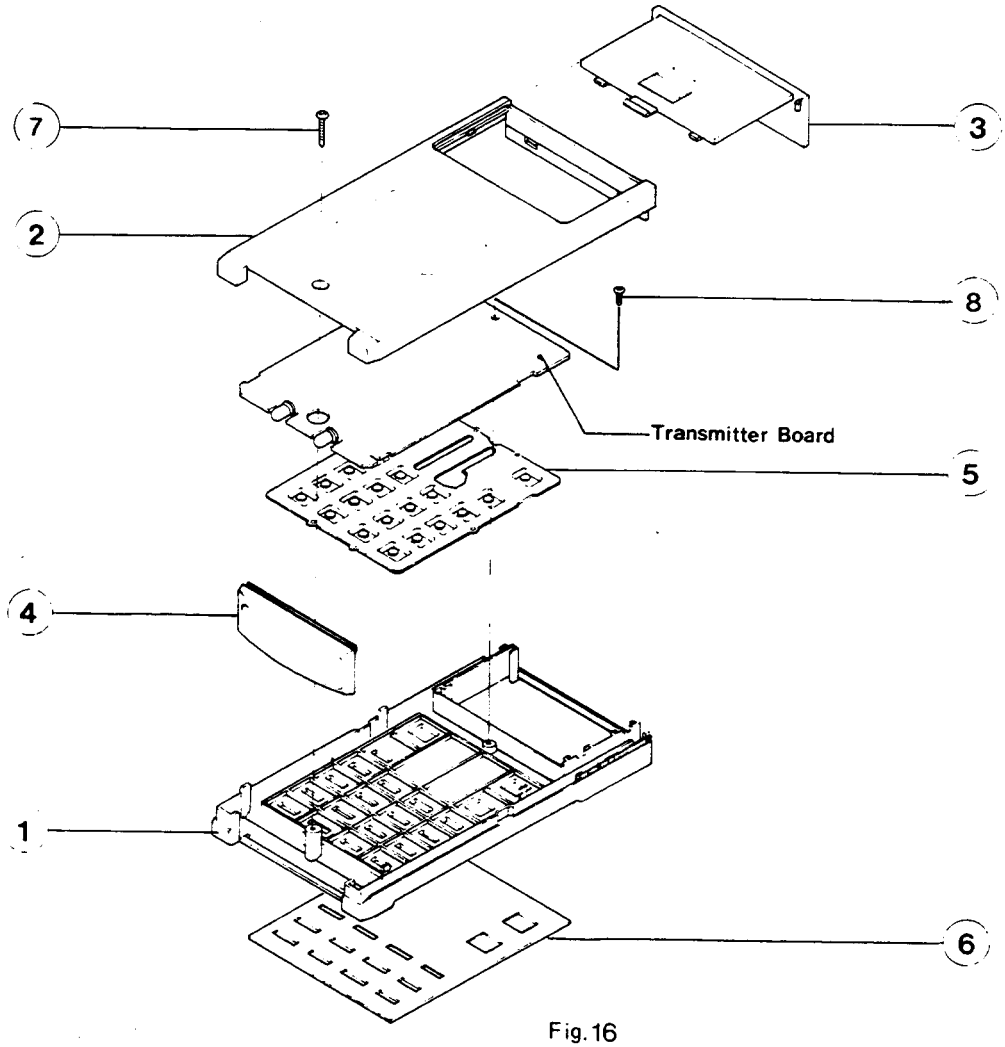


Fig.16

MECHANICAL PARTS LIST FOR MAIN UNIT

ITEM	PARTS NO.	DESCRIPTION
1	01-01 -EA0233 -05	Top Cabinet
2	01-01 -EA0234 -01	Bottom Cabinet
3	01-01 -CA0051 -01	Battery Door
4	01-01 -BA0052 -00	Infrared Lens

ITEM	PARTS NO.	DESCRIPTION
5	03-01 -DA0045 -00	Rubber Contact Plate
6	03-01 -BA0108 -02	Rubber Contact Plate
7	15-1P -T26013 -08	Screw T2.6x8 P/H(+)
8	15-1B -T20012 -00	Screw T2x6 B/H(+)

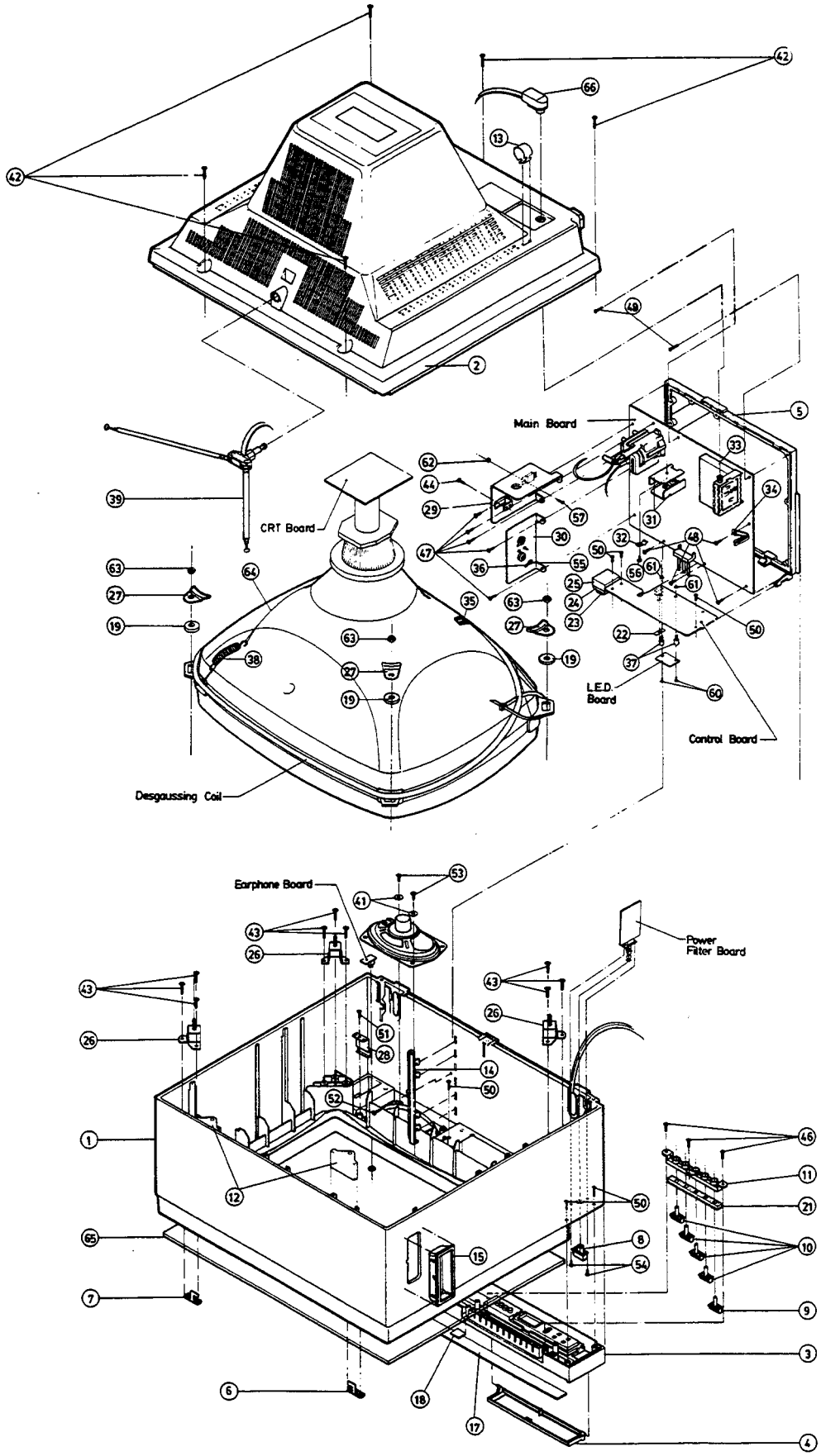

Main Board
CRT Board
Desgaussing Coil
L.E.D. Board
Control Board
Earphone Board
Power Filter Board

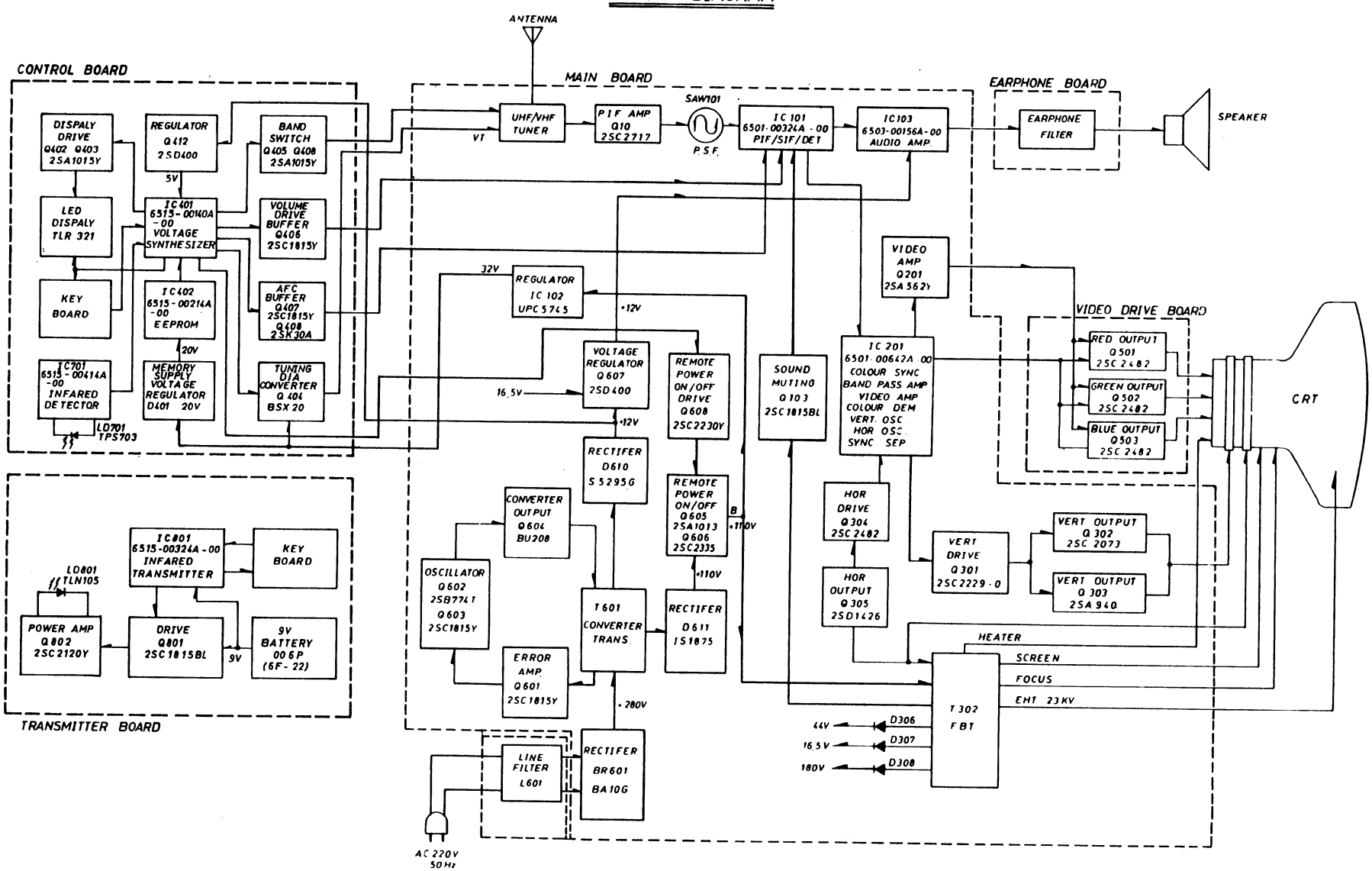
Fig 17

MECHANICAL PARTS LIST OF MAIN UNIT

ITEM	PART NO.	DESCRIPTION
1	01-01-GA0015-01	Front Cabinet
2	01-01-GA0016-00	Back Cabinet
3	01-01-FC0017-01	Control Front Panel
4	01-01-CA0264-01	Control Compartment Door
5	01-01-FA0019-00	Chassis Bracket
6	01-01-BA0022-00	Glass Mtg. Snap (Right)
7	01-01-BA0023-00	Glass Mtg. Snap (Left)
8	01-01-B—0024-00	Main Power Sw. Knob
9	01-01-BA0025-00	Soft Touch Power Button
10	01-01-BA0026-00	Vol/Ch Button (Up/Down)
11	01-01-BB0027-00	Vol/Ch Button Holder
12	01-01-BA0028-00	Cabinet Mtg. Holder
13	01-01-AA0031-00	AC Cord Clip
14	01-01-BA0055-00	Main Chassis Mtg. Holder
15	01-01-CA0067-00	Handle
17	02-01-CA0002-03	Channel Lens
18	02-01-AA0004-00	Infrared Lens
19	03-01-AA0003-00	Rubber Washer ϕ22x4
20	03-01-AA0058-00	Rubber Washer ϕ10xϕ4.8x2 THK.
21	03-01-AA0005-00	Sponge For Button
22	03-01-AA0008-00	Knob Cushion
23	04-01-AA0060-00	Infrared Shielding Cover
24	04-01-AB0034-00	Infrared Shielding Cover
25	04-01-AA0035-00	Infrared Shielding Plate
26	04-01-AA0009-00	Picture Tube Mtg. Bracket
27	04-01-AA0057-00	Degaussing Coil Mtg. Bracket
28	04-01-AA0011-00	Filter Glass Holder
29	04-01-DB0027-00	Heat Sink For Horizontal Amplifier
30	04-01-BA0026-00	Heat Sink Bracket For Power
31	04-01-AA0049-00	Heat Sink Transistor H=28mm
32	04-01-AA0014-00	Transistor Clip
33	04-01-BA0031-00	PIF Shielding Cover
34	04-01-NA0033-00	Wire Lug
35	04-01-AA0016-00	Knitted Clip
36	04-01-AA0017-00	Soldering Plate
37	05-01-AA0015-00	Display Support Post
38	06-01-AA0005-00	Grounding Wire Spring
39	07-01-NA0002-00	Indoor Antenna

ITEM	PART NO.	DESCRIPTION
40	14-01-PD3008-F0	Fibre Washer For Control P.C.B. Mtg.
41	14-01-PF3508-F0	Fibre Washer For Speaker Mtg.
		Self-Tapping Screw
42	15-1B-T40012-20	T4x20 B/H(+)
43	15-1P-T40012-20	T4x20 P/H(+)
44	15-1B-T40002-12	T4x12 B/H(+)
45	15-1B-T30012-14	T3x14 B/H(+)
46	15-1P-T30012-10	T3x10 P/H(+)
47	15-1P-T30012-12	T3x12 P/H(+)
48	15-1P-T30012-08	T3x8 P/H(+)
50	15-1P-T30012-10	T3x10 P/H(+)
51	15-1B-T30012-10	T3x10 B/H(+)
52	15-1B-T30012-12	T3x12 B/H(+)
53	15-1B-T35012-10	T3.5x10 B/H(+)
54	15-1B-T40002-10	T4x10 B/H(+)
		Machine Screw
55	15-1P-M30502-08	M3x8 P/H(+)
56	15-1P-M30502-06	M3x6 P/H(+)
57	15-1B-M30502-12	M3x12 B/H(+)
60	15-1P-M26452-05	M2.6x5 P/H(+)
61	16-1H-M26452-02	M2.6 Nut
62	16-1H-M30502-03	M3 Nut
63	16-1H-M60A01-05	M6 Nut
64	18-01-011700-01	Twisted Wire L=1700mm
65	29-02-BA0002-01	TV Filter Glass
66	30-01-NA0001-00	Matching Transformer

BLOCK DIAGRAM



TUNER CIRCUIT

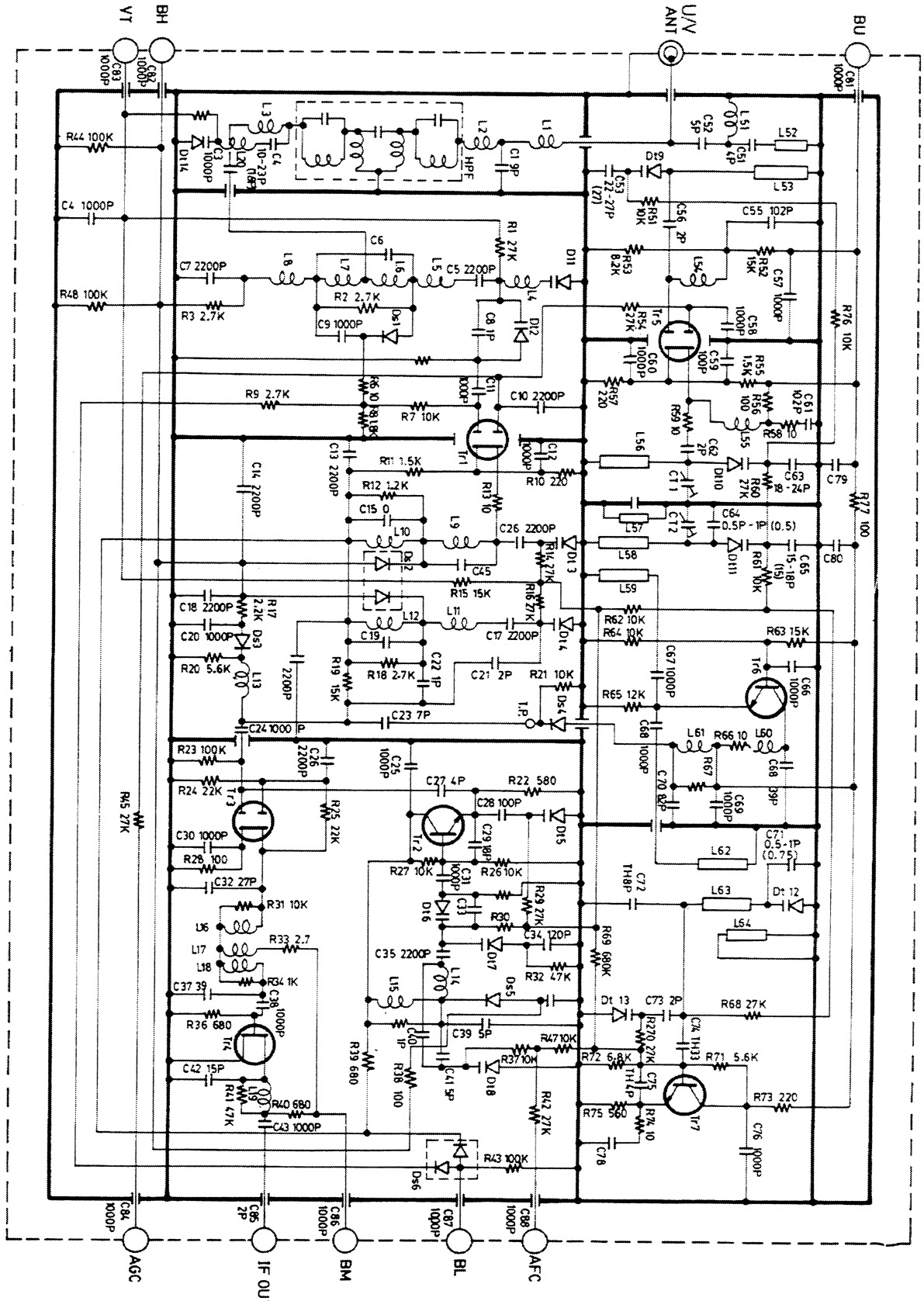
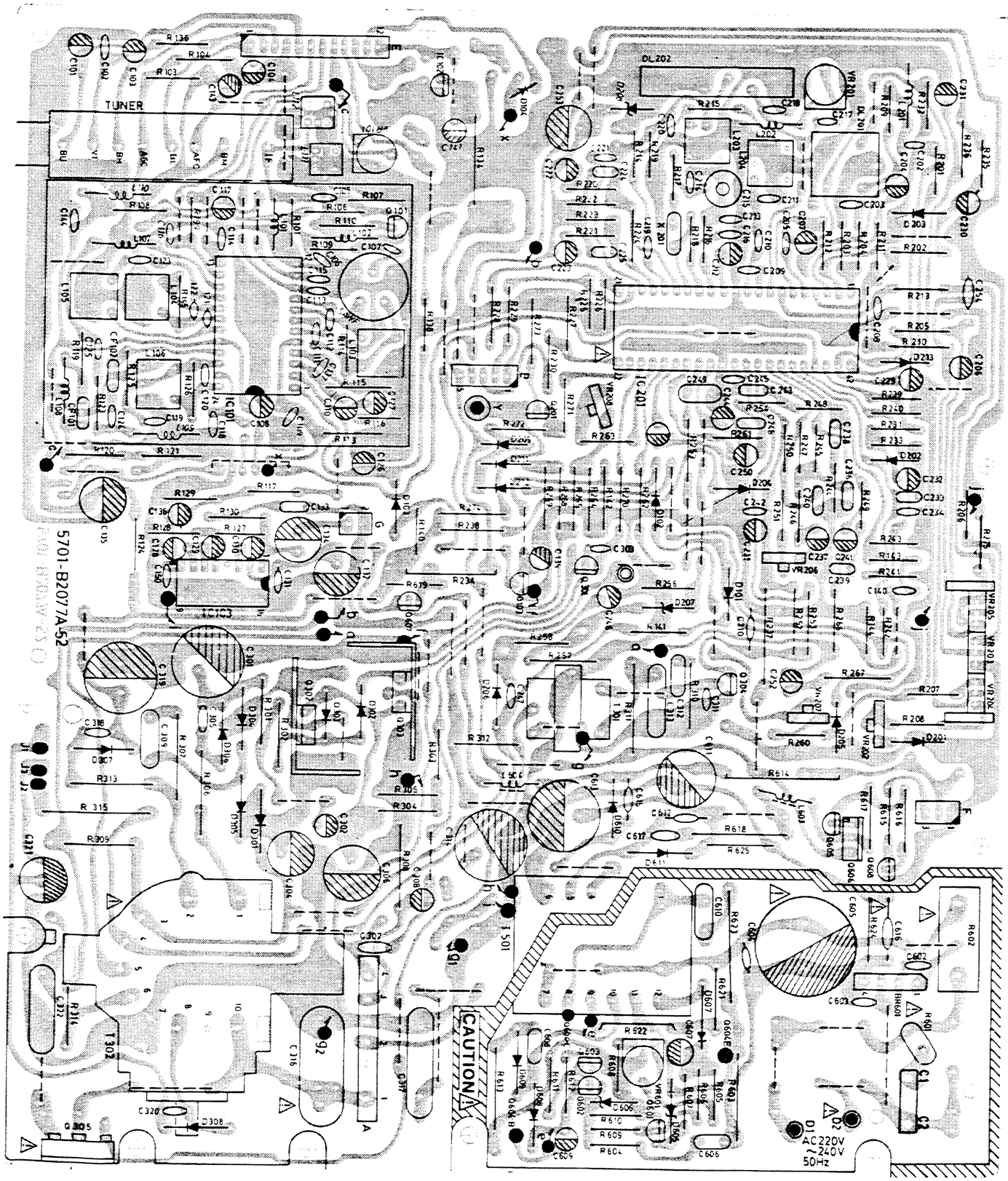
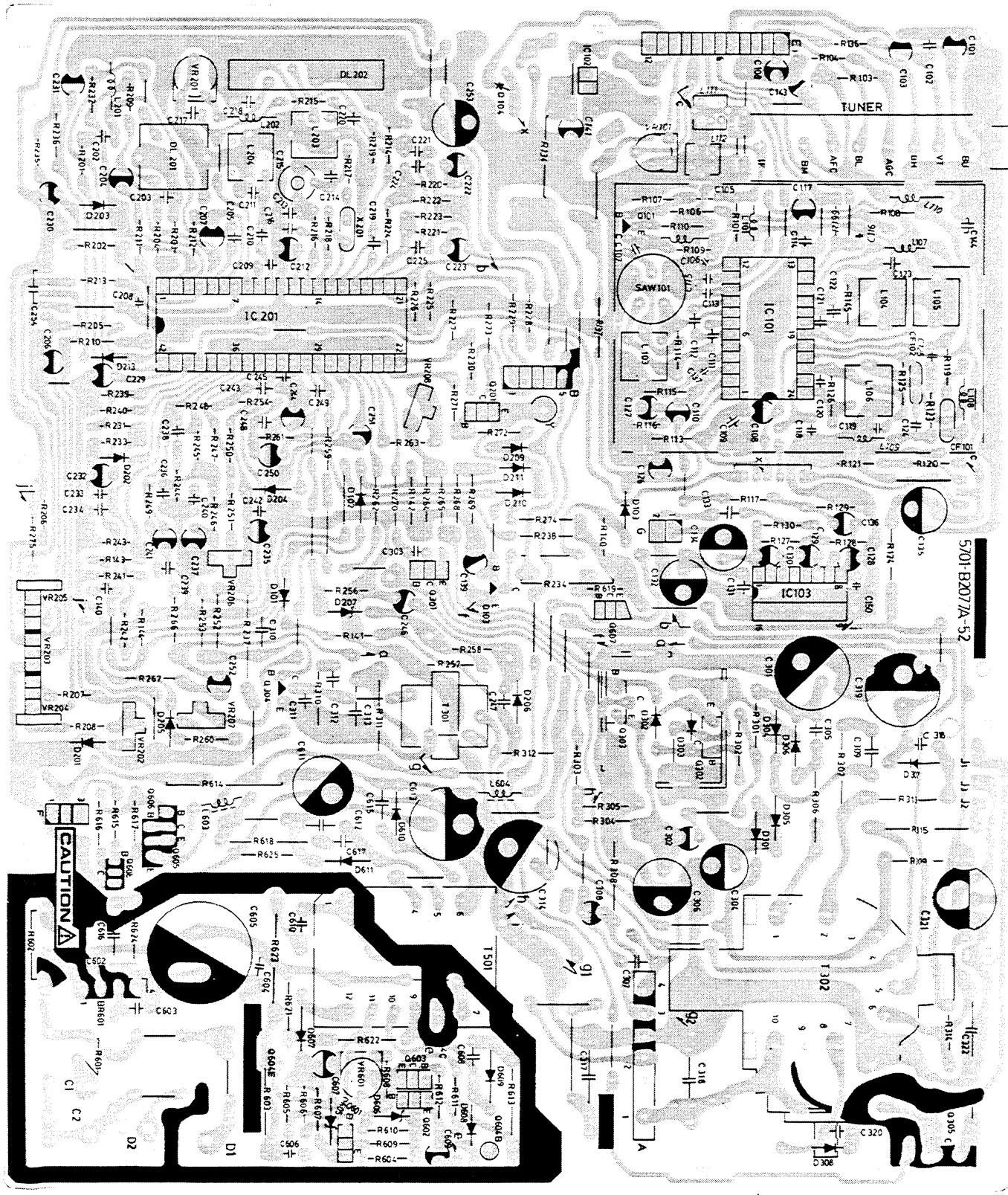


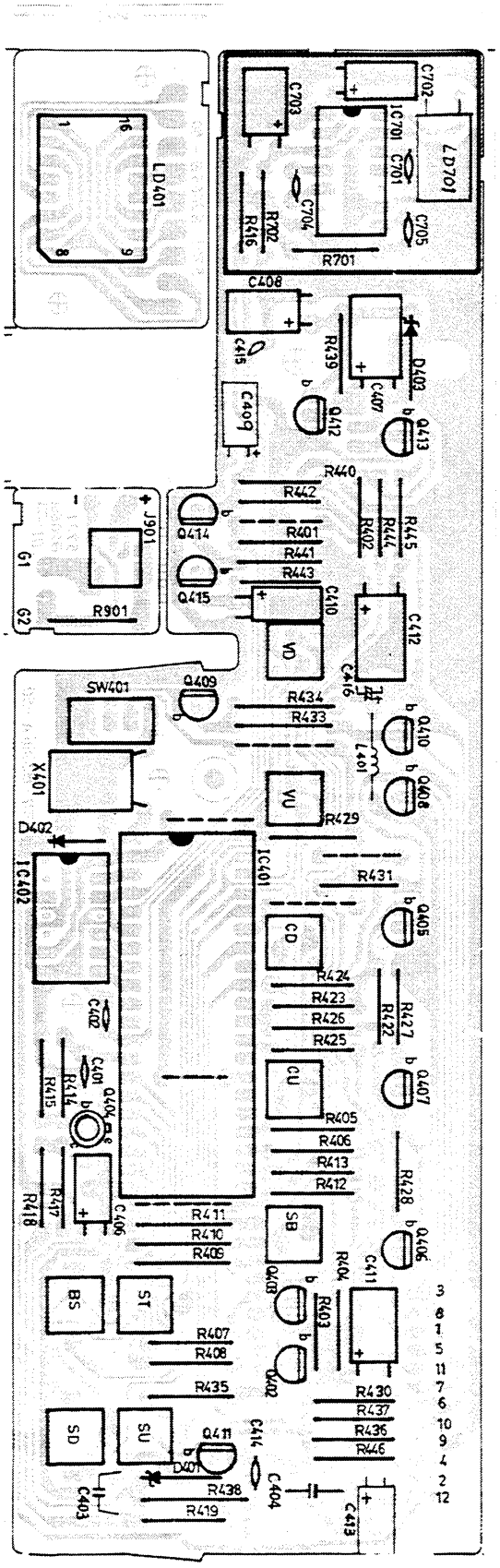
Fig. 20


TUNER
5701-B207A-52
CAUTION
AC220V ~240V 50Hz

BOTTOM VIEW OF MAIN P.C. BOARD

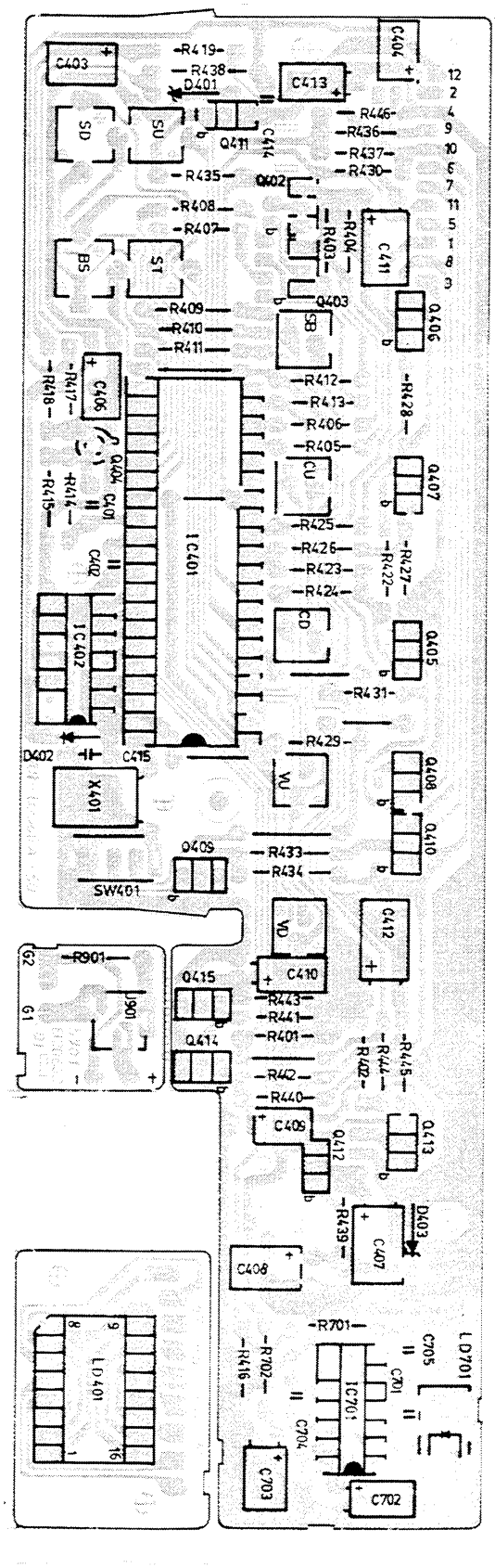


CONTROL/EARPHONE P.C. BOARD



COMPONENT VIEW

Fig. 22



BOTTOM VIEW

Fig. 23

COMPONENT VIEW OF HANDSET P.C. BOARD

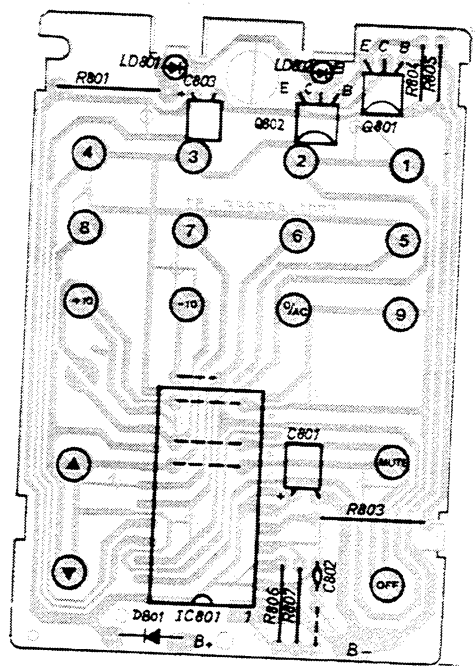


Fig. 24

COMPONENT VIEW OF CRT P.C. BOARD

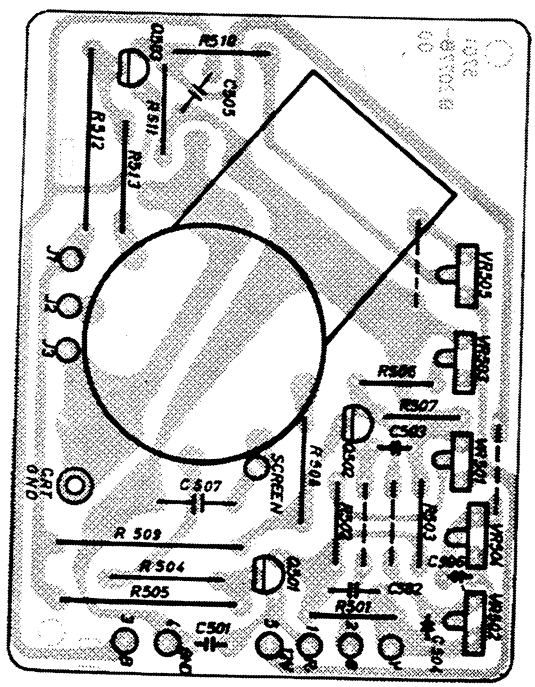


Fig. 25

BOTTOM VIEW OF CRT P.C. BOARD

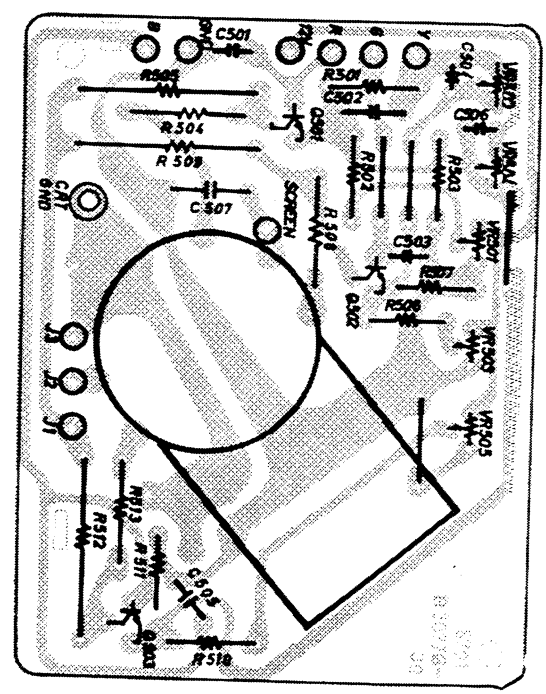


Fig. 26

COMPONENT VIEW
OF POWER FILTER P.C. BOARD

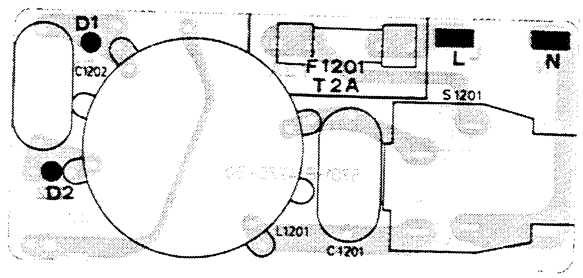


Fig. 27

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CAUTION: The areas marks ⚠ in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. Before replacing any of these components read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

ABBREVIATIONS

Resistors: **CF — Carbon Film Resistor**
CC — Carbon Composition Resistor
MF — Metal Film Resistor
MO — Metal Oxide Resistor
FU — Fusible Resistor
NI — Non-Inflammable Resistor
SF — Semi-fixed Resistor

Capacitors: CE — Ceramic Capacitor
PO — Polyestor Film Capacitor
PP — Polypropylene Film Capacitor
EL — Electrolytic Capacitor
TC — Temperature Compensating Capacitor
MP — Metal Polyestor Film Capacitor
AC — AC Capacitor

Wire: SJ — Single Jumper Wire AWG 22 (UL1007)
STJ — Strand Jumper Wire AWG 22 (UL1007)
ST — Strand Jumper Wire AWG 24 (UL1007)
STW — Strand Jumper Wire AWG 26 (UL1007)

Remark:
1) All resistors are ¼W, ±5% unless otherwise noted.
2) All capacitors are 50WV capacitor unless otherwise noted.

ELECTRICAL PART LIST

SYMBOL NO.	PART NO.	DESCRIPTION
Resistors		
R101	5400-101ADC-00	CF 100Ω
R102		
R103	5400-563ADC-00	CF 56KΩ
R104	5400-124ADC-00	CF 120KΩ
R105		
R106	5400-562ADC-00	CF 5.6KΩ
R107	5400-102ADC-00	CF 1KΩ
R108	5400-221ADC-00	CF 220Ω
R109	5400-821ADC-00	CF 820Ω
R110	5400-270ADC-00	CF 27Ω
R111		
R112		
R113	5400-824ADC-00	CF820KΩ
R114	5400-222ADC-00	CF 2.2KΩ
R115	5400-222ADC-00	CF 2.2KΩ
R116	5400-682ADC-00	CF 6.8KΩ
R117	5400-222ADC-00	CF 2.2KΩ
R118		
R119	5400-331ADC-00	CF330Ω
R120	5400-101ADC-00	CF 100Ω
R121	5400-102ADC-00	CF 1KΩ
R123	5400-102ADC-00	CF 1KΩ
R124	5404-390DGC-00	MO 39Ω 1W ±5%
⚠R125	5400-102ADC-00	CF 1KΩ
R126	5400-822ADC-00	CF 8.2KΩ
R127	5400-562ADC-00	CF 5.6KΩ

SYMBOL NO.	PART NO.	DESCRIPTION
Resistors		
R128	5400-221ADC-00	CF 220Ω
R129	5400-102ADC-00	CF 1KΩ
R130	5400-010ADC-00	CF 1Ω
R131		
R133		
R134	5404-822DHC-00	CF 8.2KΩ 2W ±5%
R135		
R136	5400-333ADC-00	CF 33KΩ
R137	5400-821ADC-00	CF 820Ω
R138		
R139		
R140	5400-822ADC-00	CF 8.2KΩ
R141	5400-103ADC-00	CF 10KΩ
R142	5400-393ADC-00	CF 39KΩ
R143	5400-332ADC-00	CF 3.3KΩ
R144	5400-103ADC-00	CF 10KΩ
R145	5400-392ADC-00	CF 3.9KΩ
R199	5400-103ADC-00	CF 10KΩ
R201	5400-821ADC-00	CF 820Ω
R202	5400-104ADC-00	CF 100KΩ
R203	5400-122ADC-00	CF 1.2KΩ
R204	5400-561ADC-00	CF 560Ω
R205	5400-124ADC-00	CF 120KΩ
R206	5400-682ADC-00	CF 6.8KΩ
R207	5400-273ADC-00	CF 27KΩ

ELECTRICAL PART LIST

SYMBOL NO.	PART NO.	DESCRIPTION
Resistors		
R208	5400-562ADC-00	CF 5.6KΩ
R209	5400-152ADC-00	CF 1.5KΩ
R210	5400-103ADC-00	CF 10KΩ
R211	5400-363ADC-00	CF 36KΩ
R211	5400-363ADC-00	CF 36KΩ
R212	5400-334ADC-00	CF 330KΩ
R213	5400-223ADC-00	CF 22KΩ
R214	5400-241ADC-00	CF 240 Ω
R215	5400-152ADC-00	CF 1.5KΩ
R216	5400-821ADC-00	CF 820Ω
R217	5400-681ADC-00	CF 680Ω
R218	5400-471ADC-00	CF 470Ω
R219	5400-471ADC-00	CF 470Ω
R220	5400-681ADC-00	CF 680Ω
R221	5400-681 ADC-00	CF 680Ω
R222	5400-333ADC-00	CF 33KΩ
R223	5400-333ADC-00	CF 33KΩ
R224	5400-823ADC-00	CF 82KΩ
R225	5400-272ADC-00	CF 2.7KΩ
R226	5400-272ADC-00	CF 2.7KΩ
R227	5400-272ADC-00	CF 2.7KΩ
R228	5400-331ADC-00	CF 330Ω
R229	5400-331ADC-00	CF 330Ω
R230	5400-331ADC-00	CF 330Ω
R231	5400-821ADC-00	CF 820Ω
R232	5400-152ADC-00	CF 1.5KΩ
R233	5400-564ADC-00	CF 560KΩ
⚠R234	5404-680DGC-00	MO 68Ω 1W ±5%
R235	5400-103ADC-00	CF 10KΩ
R236	5400-563ADC-00	CF 56KΩ
⚠R237	5404-682DHC-00	MO 6.8KΩ 2W ±5%
⚠R238	5405-681DFC-00	MO 680Ω ½W ±5%
R239	5400-242ADC-00	CF 2.4KΩ
R240	5400-333ADC-00	CF 33KΩ
R241	5400-563ADC-00	CF 56KΩ
R242	5400-104ADC-00	CF 100KΩ
R243	5400-822ADC-00	CF 8.2KΩ
R244	5400-681ADC-00	CF 680Ω
R245	5400-362ADC-00	CF 3.6KΩ
R246	5400-362ADC-00	CF 3.6KΩ
R247	5400-363ADC-00	CF 36KΩ
R248	5400-332ADC-00	CF 3.3KΩ
R249	5400-820ADC-00	CF 82Ω
R250	5405-153CDB-00	MF 15KΩ ¼W ±2%
R251	5405-154CDB-00	MF 150KΩ ¼W ±2%
R252	5400-182ADC-00	CF 1.8KΩ
R253	5400-101ADC-00	CF 100Ω
R254	5400-242ADC-00	CF 2.4KΩ

SYMBOL NO.	PART NO.	DESCRIPTION
Resistors		
R255		
R256		
R257		
R258		
R259	5400-393ADC-00	CF 39KΩ
R260	5400-244ADC-00	CF 240KΩ
R261	5400-565ADC-00	CF 5.6MΩ
R262	5400-102ADC-00	CF 1KΩ
R263	5400-183ADC-00	CF 18KΩ
R264	5400-272ADC-00	CF 2.7KΩ
R265	5400-223ADC-00	CF 22KΩ
R266	5400-273ADC-00	CF 27KΩ
R267	5400-822ADC-00	CF 8.2KΩ ½W ±5%
R268	5400-222ADC-00	CF 2.2KΩ
R269	5400-102ADC-00	CF 1KΩ
R270	5400-331ADC-00	CF 330Ω
R271	5400-471ADC-00	CF 470Ω
R272	5400-471ADC-00	CF 470Ω
R273	5400-680ADC-00	CF 68Ω
R274	5400-471AFC-00	CF 470Ω ½W ±5%
R275	5400-562ADC-00	CF 5.6KΩ
R301	5405-821DFC-00	MO 820Ω ½W ±5%
R302	5405-821DFC-00	MO820Ω ½W ±5%
R303	5400-333ADC-00	CF 33KΩ ¼W ±5%
R304	5400-563ADC-00	CF 56KΩ
R305	5403 243ADC00	CF 24 KΩ
⚠R306	5404-100EFC-00	FU 10Ω ½W ±5%
R307	5404-100DGC-00	MO 10Ω 1W ±5%
R308	5404-027DGC-00	MO 2.7Ω 1W ±5%
R309	5400-124ADC-00	CF 120KΩ ½W ±5%
R310	5400-272ADC-00	CF 2.7KΩ ½W ±5%
⚠R311	5404-222DIC-00	MO 2.2KΩ 3W ±5%
R312	5400-220AFC-00	CF 22Ω ½W ±5%
⚠R313	5404-043EGC-00	FU 4.3Ω 1W ±5%
⚠R314	5400-103AFC-00	CF 10KΩ ½W ±5%
R315	5405-039GHD-01	NI 3.9Ω 2W ±10% KW-KNP
R401	5400-223ADC-00	CF 22KΩ
R402	5400-103ADC-00	CF 10KΩ
R403	5400-103ADC-00	CF 10KΩ
R404	5400-103ADC-00	CF 10KΩ
R405	5400-103ADC-00	CF 10KΩ
R406	5400-103ADC-00	CF 10KΩ
R407	5400-331ADC-00	CF 330Ω
R408	5400-331ADC-00	CF 330Ω
R409	5400-331ADC-00	CF 330Ω
R410	5400-331ADC-00	CF 330Ω
R411	5400-331ADC-00	CF 330Ω

ELECTRICAL PART LIST

SYMBOL NO.	PART NO.	DESCRIPTION
Resistors		
R412	5400-331ADC-00	CF 330Ω
R413	5400-331ADC-00	CF 330Ω
R414	5400-471ADC-00	CF 470Ω
R415	5400-471ADC-00	CF 470Ω
R416	5400-105ADC-00	CF 1MΩ
R417	5400-103ADC-00	CF 10KΩ
R418	5400-223ADC-00	CF 22KΩ
R419	5400-153ADC-00	CF 15KΩ
R420		
R421		
R422	5400-332ADC-00	CF 3.3KΩ
R423	5400-103ADC-00	CF 10KΩ
R424	5400-103ADC-00	CF 10KΩ
R425	5400-103ADC-00	CF 10KΩ
R426	5400-103ADC-00	CF 10KΩ
R427	5400-332ADC-00	CF 3.3KΩ
R428	5400-332ADC-00	CF 3.3KΩ
R429	5400-103ADC-00	CF 10KΩ
R430	5400-223ADC-00	CF 22KΩ
R431	5400-103ADC-00	CF 10KΩ
R432		
R433	5400-105ADC-00	CF 1MΩ
R434	5400-103ADC-00	CF 10KΩ
R435	5400-103ADC-00	CF 10KΩ
R436	5400-332ADC-00	CF 3.3KΩ
R437	5400-223ADC-00	CF 22KΩ
R438	5400-222DFC-00	MO 2.2KΩ ½W ±5%
R439	5400-331ADC-00	CF 330Ω
R440	5400-103ADC-00	CF 10KΩ
R441	5400-473ADC-00	CF 47KΩ
R442	5400-222ADC-00	CF 2.2KΩ
R443	5400-473ADC-00	CF 47KΩ
R444	5400-153ADC-00	CF 15KΩ
R445	5400-472ADC-00	CF 4.7KΩ
R446	5400-561ADC-00	CF 560Ω
R446	5400-153ADC-00	CF 15KΩ
R501	5403-151ADC-00	CF 150Ω
R502	5403-152ADC-00	CF 1.5KΩ
R503	5403-472ADC-00	CF 4.7KΩ
R504	5406-472BFD-00	CC 4.7KΩ ½W ±10%
⚠R505	5404-153DHC-00	MO15KΩ 2W ± 5%
R506	5403-152ADC-00	CF 1.5KΩ
R507	5403-472ADC-00	CF 4.7KΩ
R508	5406-472BFD-00	CC 4.7KΩ ½W ±10%
⚠R509	5404-153DHC-00	MO 15KΩ 2W ±5%
R510	5403-152ADC-00	CF 1.5KΩ
R511	5403-472ADC-00	CF 4.7KΩ
R512	5404-153DHC-00	MO 15KΩ 2W ±5%

SYMBOL NO.	PART NO.	DESCRIPTION
Resistors		
⚠R513	5406-472BFD-00	CC 4.7KΩ ½W ±10%
⚠R601	5407-300KZZ-00	P.T.C. Thermistor
⚠R602	5405-040GKD-00	NI 4Ω 5W ±10% KW-SQZ
⚠R603	5405-022GHD-01	NI2.2Ω 2W ±10% KW-KNP
R604	5400-331ADC-00	CF 330Ω
R605	5400-682ADC-00	CF 6.8KΩ
R606	**5400-182ADC-00**	**CF 1.8KΩ**
R607	5400-822ADC-00	CF 8.2KΩ
R608	5400-332ADC-00	CF 3.3KΩ
R609	5400-103ADC-00	CF 10KΩ
⚠R610	5400-682ADC-00	CF 6.8KΩ
R611	5400-472ADC-00	CF 4.7KΩ
R612	5404-120DHC-00	MO 12Ω 2W ±5%
R613	5404-270DHC-00	MO 27Ω 2W ±5%
⚠R614	5404-390DGC-00	MO 39Ω 1W ±5%
R615	5400-103ADC-00	CF 10KΩ
R616	5400-104AFC-00	CF 100KΩ ½W ±5%
⚠R617	5400-272ADC-00	CF 2.7KΩ
R618	5404-120DHC-00	MO 12Ω 2W ±5%
R619	**5400-681ADC-00**	**CF 680Ω**
⚠R620	5404-003DHC-00	MO 0.33Ω 2W ±5%
R621	5406-184BFD-00	CC 180KΩ ½W ±10%
R622	5406-184BFD-00	CC 180KΩ ½W ±10%
⚠R623	5405-390GLD-01	NI 39Ω 6W ±10% KW-KNP
⚠R624	5406-565BFD-00	CC 5.6MΩ ½W ±10%
R625	5400-104AFC-00	CF 100KΩ ½W ± 5%
R701	5400-103ADC-00	CF 10KΩ
R702	5400-101ADC-00	CF 100Ω
R801	5403-047ADC-00	CF 4.7Ω
R802		
R803	5403-102ADC-00	CF 1KΩ
R804	5403-101ADC-00	CF 100Ω
R805	5403-272ADC-00	CF 2.7KΩ
R806	5405-203CDB-00	MF 20KΩ ¼W ±2%
R807	5405-333CDB-00	MF 33KΩ ¼W ±2%
R901	5403-101AFC-00	100Ω ½W ±5%
Capacitors		
C101	5600-A474FE-00	EL 0.47uF 50V ±20%
C102	5600-B104FH-00	CE 0.1uF 50V +80%-20%
C103	5600-A474FE-00	EL 0.47uF 50V ±20%
C104	5600-A474FE-00	EL 0.47uF 50V ±20%
C105	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C106	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C107	5600-B102FD-00	CE 0.001uF 50V ±10%
C108	5600-A224FE-00	EL 0.22uF 50V ±20%

ELECTRICAL PART LIST

SYMBOL NO:	PART NO.	DESCRIPTION
Capacitors		
C109	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C110	5600-A225FE-00	EL 2.2uF 50V ±20%
C111	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C112	5600-B102FD-00	CE 0.001uF 50V ±10%
C113	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C114	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C115	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C116	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C117	5600-A106CE-00	EL 10uF 16V ±20%
C118	5600-C472GD-00	PO 0.0047uF 100V ±10%
C119	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C120	5610-J680FC-00	TC 68PF 50V ±5%
C121	5600-B020FA-00	CE 2PF 50V ±0.25PF
C122	5600-B020FA-00	CE 2PF 50V ±0.25PF
C123	5600-B150FC-00	CE 15PF 50V ±5%
C124	5600-B470FC-00	CE 47PF 50V ±5%
C125	5600-B470FC-00	CE 47PF 50V ±5%
C126	5600-A475FE-00	EL 4.7uF 50V ±20%
C127	5600-A225FE-00	EL 2.2uF 50V ±20%
C128	5600-A106CE-00	EL 10uF 16V ±20%
C129	5600-A225FE-00	EL 2.2uF 50V ±20%
C130	5600-A476CE-00	EL 47uF 16V ±20%
C131	5600-B104FH-00	CE 0.1uF 50V +80%-20%
C132	5600-A108CE-00	EL 1000uF 16V ±20%
C133	5600-C104DG-00	PO 0.1uF 100V ±10%
C134	5600-A337CE-00	EL 330uF 16V ±20%
C135	5600-A337CE-00	EL 330uF 16V ±20%
C136	5600-A224FE-00	EL 0.22uF 50V ±20%
C137	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C138		
C139	5600-A475DE-00	EL 4.7uF 25V ±20%
C140	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C141	5600-A225FE-00	EL 2.2uF 50V ±20%
C142		
C143	5600-A105FE-00	EL 1uF 50V ±20%
C144	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C145		
C146		
C149		
C150	5600-B203FH-00	CE 0.02uF 50V +80%-20%
C201		
C202	5600-B150FC-00	CE 15PF 50V ±5%
C203	5600-B390FC-00	CE 39PF 50V ±5%
C204	5600-A105FE-00	EL 1uF 50V ±20%
C205	5600-B100FC-00	CE 10PF 50V ±5%
C206	5600-A476CE-00	EL 47uF 16V ±20%

SYMBOL NO.	PART NO.	DESCRIPTION
Capacitors		
C207	5600-A105FE-00	EL 1uF 50V ±20%
C208	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C209	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C210	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C211	5600-B330FC-00	CE 33PF 50V ±5%
C212	5600-A474FE-00	EL 0.47uF 50V ±20%
C213	5600-B470FC-00	CE 47PF 50V ±5%
C214	5600-B100FC-00	CE 10PF 50V ±5%
C215	5504-A2010B-00	Trimmer Capacitor 20PF
C216	5600-B680FC-00	CE 68PF 50V ±5%
C217	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C218	5600-B150FC-00	CE 15PF 50V ±5%
C219	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C220	5600-B560FC-00	CE 56PF 50V ±5%
C221	5600-B103FH-00	CE 0.01uF 50V ±5%
C222	5600-A106CE-00	EL 10uF 16V ±20%
C223	5600-A106CE-00	EL 10uF 16V ±20%
C224	5600-C223GD-00	PO 0.22uF 100V ±10%
C225	5600-C223GD-00	PO 0.022uF 100V ±10%
C226		
C227		
C228		
C229	5600-A105FE-00	EL 1uF 50V ±20%
C230	5600-A475FE-00	EL 4.7uF 50V ±20%
C231	5600-A226CE-00	EL 22uF 16V ±20%
C232	5600-A105FE-00	EL 1uF 50V ±20%
C233	5600-C103DG-00	PO 0.01uF 100V ±10%
C234	5600-B471FC-00	CE 470PF 50V ±5%
C235	5600-A106CE-00	EL 10uF 16V ±20%
C236	5615-D562FC-00	PP 0.0056uF 50V ±5%
C237	5600-A105FE-00	EL 1uF 50V ±20%
C238	5615-D152FC-00	PP 0.0015uF 50V ±5%
C239	5615-D103FC-00	PP 0.01uF 50V ±5%
C240	5615-D302FC-00	PP 0.003uF 50V ±5%
C241	5600-A474FE-00	EL 0.47uF 50V ±20%
C242	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C243	5600-C333GD-00	PO 0.033uF 100V ±10%
C244		
C245	5600-B102FD-00	CE 0.001uF 50V ±10%
C246		
C248	5600-C153GD-00	PO 0.015uF 100V ±10%
C249	5600-C224GD-00	PO 0.22uF 100V ±10%
C250	5600-A474FE-00	EL 0.47uF 50V ±20%
C251	5600-A225FD-00	EL 2.2uF 50V ±10%
C252	5600-A474FE-00	EL 0.47uF 50V ±20%
C253	5600-A477CE-00	EL 470uF 16V ±20%
C254	5600-B403FH-00	CE 0.04uF 50V +80%-20%

ELECTRICAL PART LIST

SYMBOL NO.	PART NO.	DESCRIPTION
Capacitors		
C301	5600-A107FE-00	EL 100uF 50V ±20%
C302	5600-A106FE-00	EL 10uF 50V ±20%
C303	5600-B221MD-00	CE 220PF 500V ±10%
C304	5600-A475HG-00	EL 4.7uF 160V +50%-10%
C305	5600-B681MD-00	CE 680PF 500V ±10%
C306	5600-A227FE-00	EL 220uF 50V ±20%
C307	5600-B472MD-00	CE 0.0047uF 500V ±10%
C308	5600-A225FE-00	EL 2.2uF 50V ±20%
C309	5615-D153ID-00	PP 0.015uF 200V ±10%
C310	5600-B102FD-00	CE 0.001uF 50V ±10%
C311	5600-B391MD-00	CE 390PF 500V ±10%
C312	5615-D222ØD-00	PP 0.0Ø22uF 630V ±10%
C313	5615-D473ID-00	PP 0.047uF 200V ±10%
C314	5600-A107HG-00	EL 100uF 160V +50%-10%
C315	5600-A106KG-00	EL 10uF 250V +50%-10%
C316	5615-E662TC-00	PP 0.0066uF 1600V ±5%
C317	5615-D474ID-00	PP 0.47uF 200V ±10%
C318	5600-B681MD-00	CE 680PF 500V ±10%
C319	5600-A108DE-00	EL 1000uF 25V ±20%
C320	5600-B681MD-00	CE 680PF 500V ±10%
C321	5600-A106KG-00	EL 10uF 250V +50%-10%
C322	5615-D563ID-00	PP 0.056uF 200V ±10%
C401	5600-B471FC-00	CE 470PF 50V ±5%
C402	5600-B101FC-00	CE 100PF 50V ±5%
C403	5600-A224FE-00	EL 0.22uF 50V ±20%
C404	5600-C224GD-00	PO 0.22uF 100V ±10%
C405		
C406	5600-A106FE-00	EL 10uF 50V ±20%
C407	5600-A227CE-00	EL 220uF 16V ±20%
C408	5600-A106BE-00	EL 10uF 10V ±20%
C409	5600-A106BE-00	EL 10uF 10V ±20%
C410	5600-A475DE-00	EL 4.7uF 25V ±20%
C411	5600-A107BE-00	EL 100uF 10V ±20%
C412	5600-A107BE-00	EL 100uF 10V ±20%
C413	5600-A475CE-00	EL 4.7uF 16V ±20%
C414	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C415	5600-B103FH-00	CE 0.01uF 50V +80%-20%
C416	5600-A106CE-00	EL 10uF 16V ±20%
C501	5605-B181FC-00	CE 180PF 50V ±5%
C502	5605-B102FD-00	CE 0.001uF 50V ±10%
C503	5605-B181FC-00	CE 180PF 50V ±5%
C504	5605-B102FD-00	CE 0.001uF 50V ±10%
C505	5605-B181FC-00	CE 180PF 50V ±5%
C506	5605-B102FD-00	CE 0.001uF 50V ±10%
C507	5605-B472RD-00	CE 0.0047uF 1KV ±10%
C601		
C602	5600-B472MD-00	CE 0.0047uF 500V ±10%
C603	5600-B472MD-00	CE 0.0047uF 500V ±10%

SYMBOL NO.	PART NO.	DESCRIPTION
Capacitors		
C604	5600-B472RD-00	CE 4700PF 1kV ±10%
⚠C605	5600-A107LG-00	EL 100uF 400V +50%-10%
C606	5600-C333GD-00	PO 0.033uF 100V ±10%
C607	5600-A106FE-00	EL 10uF 50V ±20%
C608	5600-C104GD-00	PO 0.1uF 100V ±10%
C609	5600-A476DE-00	EL 47uF 25V ±20%
C610	5615-E222RD-00	PP 0.0022uF 1200V ±10%
C611	5600-A477DE-00	EL 470uF 25V ±20%
C612	5600-B222RD-00	CE 2200PF 1KV ±10%
C613	5600-A476HG-00	EL 47uF 160V +50%-10%
C614		
C615	5600-B681MD-00	CE 680PF 500V ±10%
C616	5600-F222XE-00	CE 2200PF AC 400V ±20%
C617	5600-B472RD-00	CE 4700PF 1KV ±10%
C701	5600-C102GD-00	PO 0.001uF 100V ±10%
C702	5600-A225FE-00	EL 2.2uF 50V ±20%
C703	5600-A226BE-00	EL 22uF 10V ±20%
C704	5600-C103GD-00	PO 0.01uF 100V ±10%
C705	5600-C203GD-00	PO 0.02uF 100V ±10%
C801	5600-A107BE-00	EL 100uF 10V ±20%
C802	5605-B101FC-00	CE 100PF 50V ±5%
C803	5600-A107BE-00	EL 100uF 10V ±20%
C1201	5615-E224WE-01	Film Capacitor 0.22uF AC 250V VDE
C1202	5615-E474WE-02	Film Capacitor 0.47uF AC 250V VDE
Transistors		
Q101	5101-C00303-00	2SC 2717
Q102		
Q103	5101-C00205-00	2SC 1815-Y
Q201	5101-A00104-00	2SA562-TMY
Q301	5101-C00503-00	2SC 2229-0
Q302	5101-C00603-00	2SC 2073
Q303	5101-A00203-00	2SA 940
Q304	5101-C00703-00	2SC 2482
⚠Q305	5101-D00201-00	2SD 1426
Q401		
Q402	5101-A00404-00	2SA 1015Y
Q403	5101-A00404-00	2SA1015Y
Q404	5106-C00103-00	BSX20
Q405	5101-A00404-00	2SA 1015Y
Q406	5101-A00404-00	2SA 1015Y
Q407	5101-A00404-00	2SA 1015Y
Q408	5101-A00404-00	2SA 1015Y
Q409	5101-C00205-00	2SC1815Y
Q410	5101-E00107-00	2SK30A (FET)

ELECTRICAL PART LIST

SYMBOL NO.	PART NO.	DESCRIPTION
Transistors		
Q411	5101-C00205-00	2SC 1815Y
Q412	5103-D00102-00	2SD 400F
Q413	5101-A00404-00	2SA 1015Y
Q414	5101-C00205-00	2SC 1815Y
Q415	5101-C00205-00	2SC 1815Y
Q501	5101-C00703-00	2SC 2482
Q502	5101-C00703-00	2SC 2482
Q503	5101-C00703-00	2SC 2482
Q601	5101-C00205-00	2SC 1815–Y
Q602	5104-B00103-00	2SB774–T
Q603	5101-C00205-00	2SC 1815–Y
⚠ Q604	5101-D00601-00	2SD820
⚠ Q605	5101-A00504-00	2SA 1013Y
⚠ Q606	5102-C00101-00	2SC 2335
Q607	5103-D00102-00	2SD 400F
Q608	5101-C00804-00	2SC 2230–AY
Q801	5101-C00206-00	2SC 1815–BL
Q802	5101-C00904-00	2SC 2120–Y
Diodes		
D101	5201-05001A-00	IN 4148
D102	5201-05001A-00	IN 4148
D103	5201-05001A-00	IN 4148
D104	5201-05001A-00	IN 4148
D201	5201-05001A-00	IN 4148
D202	5201-02001A-00	IS 1555
D203	5201-02001A-00	IS 1555
D204	5201-05001A-00	IN 4148
D205	5201-02001A-00	IS 1555
D206		
D207		
D208		
D209	5201-02001A-00	IS 1555
D210	5201-02001A-00	IS 1555
D211	5201-02001A-00	IS 1555
D212		
D213	5201-02001A-00	IS 1555
D301	5201-01001A-00	IN 4004S
D302	5201-02001A-00	IS 1555
D303	5201-02001A-00	IS 1555
D304	5201-02005-00	TVR-2D
D305	5201-02005-00	TVR-2D
D306	5201-02002A-00	S5295J
D307	5201-02003A-00	S5295G
D308	5201-02003A-00	S5295G
D401	5209-04014A-00	20V Zener (UZ20B) ½W
D402	5201-05001A-00	IN 4148

SYMBOL NO.	PART NO.	DESCRIPTION
Diodes		
D403	5203-04012A-00	5.6V Zener (GZA5.6Y)
D601	5203-01002A-00	DBA 10G
D602		
D603		
	5203-04006A-00	12V Zener
D605	5203-04008A-00	8.2V Zener (GZA 8.2Y)
D606	5203-04009A-00	9.1V Zener (GZA 9.1Y)
D607	5201-02003A-00	S 5295G
D608	5201-02003A-00	S5295G
D609	5201-02003A-00	S5295G
⚠ D610	5201-02003A-00	S5295G
⚠ D611	5201-02004A-00	IS 1835
D801	5201-05001A-00	IN 4148
Coil & Transformers		
L101		
L102	5805-01002A-AA	Peaking Coil
L103	5801-10001A-AA	PIF Matching Coil
L104	5801-10002A-AA	PIF DET Coil
L105	5801-10002A-AA	PIF DET Coil
L106	5801-10003A-AA	SIF DET Coil
L107	5805-01005A-AA	Peaking Coil
L108	5805-01008A-AA	Peaking Coil
L109	5805-01008A-AA	Peaking Coil
L110	5805-01012A-AA	Peaking Coil
L201	5805-01010A-AA	Peaking Coil
L202	5805-01006A-AA	Peaking Coil
L203	5801-10012A-AA	Delay Line Matching Coil
L204	5801-10004A-AA	Burst Cleaning Coil
L603	5801-10011A-AA	Choke Coil
L604	5806-02003A-AA	Choke Coil
L111,112	5801-10022A-AA	Trap Coil
L901,902	5805-01012A-AA	Choke Coil 100uH
L903	5809-02001A-AA	Choke Coil 10uH
	5807-08015A-AA	Deguassing Coil
⚠ T301	5901-04001A-AA	Horizontal Drive Transformer
⚠ T302	5908-05008A-AA	Flyback Transformer
⚠ T601	5903-06002A-AA	Switching Transformer

ELECTRICAL PART LIST

SYMBOL NO.	PART NO.	DESCRIPTION
P.C. Boards		
PCB401	5701-B2066A-50	Control P.C. Board
PCB501	5701-B2077B-00	CRT P.C. Board 90x70mm
PCB801	5701-A2088E-51	Transmitter P.C. Board
	5701-B2077A-52	Main P.C. Board 260x220mm
	5701-B2066B-50	LED P.C. Board
	5701-B2066C-01	Earphone Jack P.C. Board
	5701-B1477C-50	Line Filter P.C. Board
Wires		
W501	6900-CO4412-IA	ST 440mm Red (J1)
W502	6900-CO4414-IA	ST 440mm Yellow (J2)
W503	6900-CO4410-IA	ST 440mm Black (J3)
	6900-BM5000-IA	SJ 50mm Black
	6900-BM6000-IA	SJ 60mm Black
	6900-BM8000-IA	SJ 80mm Black
	6900-BM1116-IA	SJ 110mm Blue
	6900-BM1210-IA	SJ 120mm Black
	6900-BM1314-IA	SJ 130mm Yellow
	6900-BM1814-IA	SJ 180mm Yellow
	6900-CM1310-IB	STJ 130mm Black
	6900-LM7002-IA	70mm Red AWG22 (UL1015)
	6900-CO6000-IA	ST 60mm Black
	6900-C07001-IA	ST 70mm Brown
	6900-CO1314-IA	ST 130mm Yellow SP⊕
	6900-CO1210-IA	ST 120mm Black SP⊖
	6900-CQ1411-IA	STW 140mm Brown
	6900-CQ1412-IA	STW 140mm Red
	6900-CQ1413-IA	STW 140mm Orange
	6900-CQ1414-IA	STW 140mm Yellow
	6900-CQ1415-IA	STW 140mm Green
	6900-CQ1416-IA	STW 140mm Blue
	6900-CQ1417-IA	STW 140mm Violet
	6900-CQ1418-IA	STW 140mm Grey
	6900-CQ1419-IA	STW 140mm White
	6900-LM1910-IA	190mm Black AWG22 (UL1015)

SYMBOL NO.	PART NO.	DESCRIPTION
Miscellaneous		
IC401	6515-00140A-00	IC SAA 1293-02
IC402	6515-00214A-00	IC MDA 2062
IC701	6515-00414A-00	IC TBA 2800
IC801	6515-00324A--0	SAA 1250 ITT
IC101	6501-00324A-00	TA 7680AP
IC201	6501-00642A-00	TA 7698AP
IC103	6503-00516A-00	TDA 1904P
IC102	6506-00202A-00	L5630
VR101	5301-50302B-00	5KB AGC
VR201	5301-10302B-00	1KB Colour Matrix
VR202	5302-20305A-00	2KB Sub-Bright
VR206	5302-10405A-00	10KB H-Hold V-Height
VR207	5302-20505A-00	200KB V-Hold
VR208	5302-10405A-00	10KB H-Hold V-Height
VR501	5301-10402A-00	10KB R.G.B. Cut Off
VR502	5301-20202A-00	200B G.B. – Drive
VR503	5301-10402A-00	10KB R.G.B. Cut Off
VR504	5301-20202A-00	200B G.B. – Drive
VR505	5301-10402A-00	10KB R.G.B. Cut Off
VR601	5301-10302B-00	1KB Colour Matrix
Socket A	6003-01006A-00	SMK-6 Pins Wafer
Socket C	6005-01001F-00	Taiko Connector Pin Terminal
Socket D	6005-01001F-00	Taiko Connector Pin Terminal
Socket G	6005-01002A-00	Pin Ass'y2 Pins Wafer
⚠ CRT GND	6005-01001F-00	Taiko Connector Pin 005P-2100
Plug H	7405-001300-00	Taiko Connector (5 Pins)
Plug Y	7402-000100-01	SMK-1 Pin Connector
	7405-006700-00	Taiko Connector (12 Pins)
	7405-002400-00	Taiko Connector (3 Pins)
SP Socket G	7405-000700-00	Taiko Connector V-Type (2 Pins)
CRT Grounding	7405-000100-01	Taiko Connector (1 Pin)
Socket Y	6003-01001A-00	SMK-1 Pin Connector
	7405-006800-00	Taiko Connector
	7405-006900-00	Taiko Connector
SW401	6106-010201-AA	1P2T AFC Switch
SW1201	6110-020201-LA	Power Switch
	6103-010101-AA	Conductive Rubber Key Switch

ELECTRICAL PART LIST

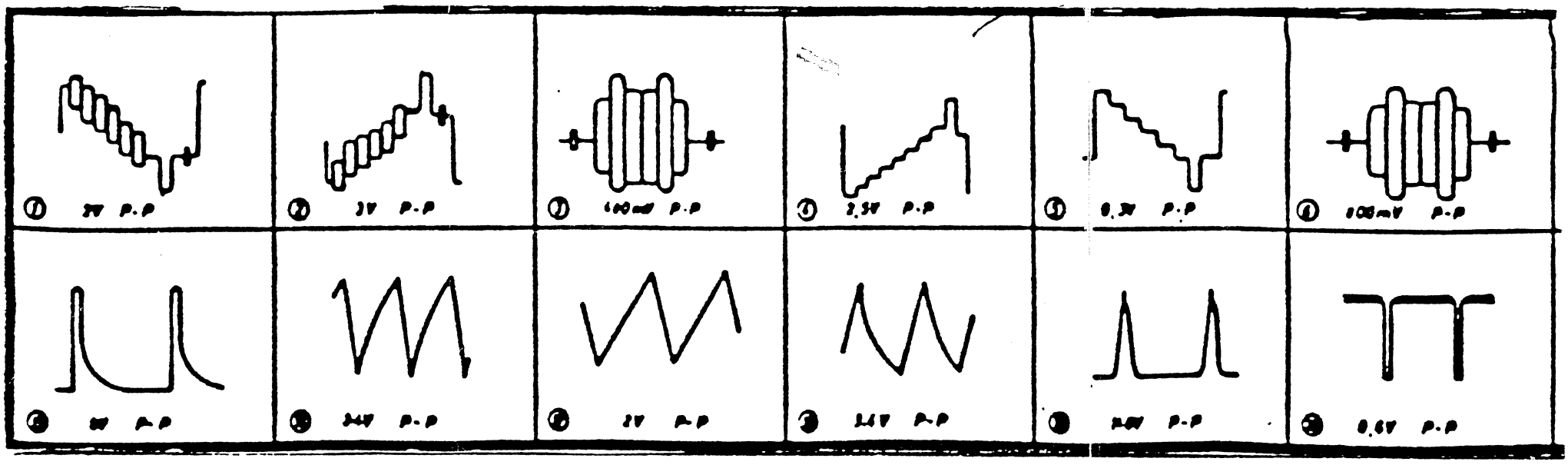
SYMBOL NO.	PART NO.	DESCRIPTION
Miscellaneous		
	6113-010101-AA	TACT Switch
LD701	6601-F00100-00	Photo Diode TPS703
LD801	6601-E00100-00	Infrared LED TLN105
	6601-D00200-00	LED TOSHIBA TLR321
DL-1	5801-07001A-AA	Y-Delay Line
CF102	6301-5504CB-00	Ceramic Filter 5.5MHz
CF101	6301-5504CB-01	Ceramic Filter 5.5MHz
X401	6303-4004AA-00	Crystal 4MHz
X201	6303-4434AA-00	Crystal 4.43361/5 MHz
	6401-040701-00	Tuner B/G System
SAW101	6708-011100-00	TV PIF Saw Filter F1037
	6702-020100-00	Potentiometer 10KB + 10KB + 1KB

SYMBOL NO.	PART NO.	DESCRIPTION
Miscellaneous		
DL202	6703-030100-00	Ultrasonic Delay Line
SK501	7201-06001B-00	Picture Tube Socket
	5605-B203FH-00	0.02uF 50V +80%-20%
	6202-01003A-00	Loud Speaker 8Ω 3"x5" 2W
	7001-51105A-AA	Colour Picture Tube (VW)
	7201-02002F-00	Earphone Jack
	5813-06004A-AA	Line Filter
	6808-D00100-00	Ferrite Ring
	6906-AH2620-HA	AC Line Cord VDE
F1201	7102-200001-00	Fuse T2A
	7203-07001A-00	Fuse Holder
BC801	7400-000100-90	9V Battery Cap. I-Type 80mm Red/Black

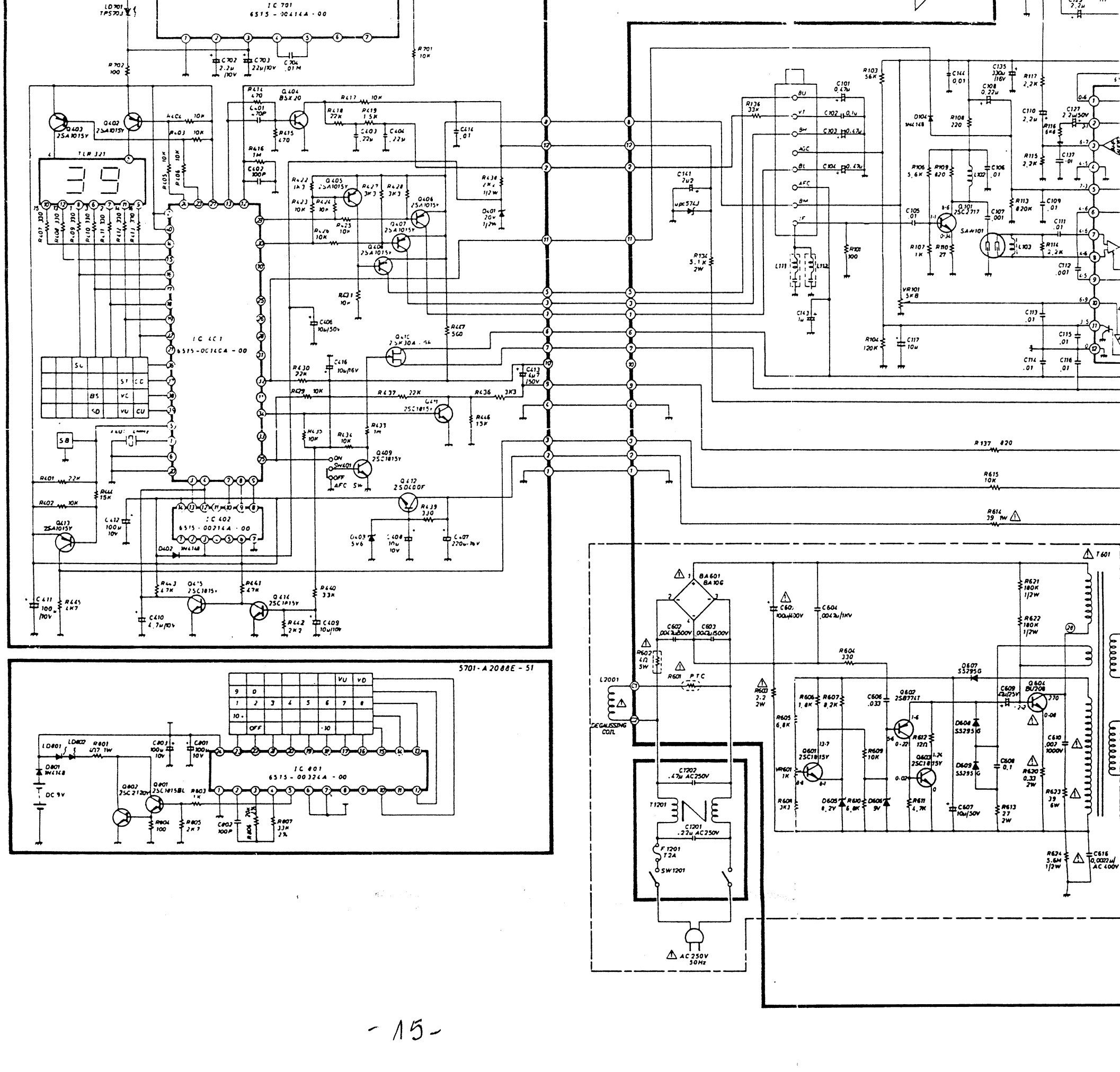
SPECIFICATIONS

TELEVISION SYSTEM	B/G for 625 Lines
COLOUR SYSTEM	PAL
CHANNEL COVERAGE	VHF_L Channel 2 to 4 S_1' to S_3' — For CATV only S_1 to S_2
	VHF_H Channel 5 To 12 S_3 TO S_{20} — For CATV only
	UHF Channel 21 to 69
INTERMEDIATED FREQUENCY	
PIF Carrier Freq.	38.9 MHz
SIF Carrier Freq.	33.4 MHz
Colour Sub-carrier Freq.	34.47 MHz
Center Freq.	37.9 MHz
PICTURE TUBE SIZE	A48JAN90×02(VW)
SOUND OUTPUT	2W (Max.)
SPEAKER	3" × 5" 8 ohm 2W
ANTENNA INPUT IMPEDANCE	75 ohm Unbalanced
POWER SOURCE	AC 220V 50Hz
POWER CONSUMPTION	75W (Max.)
NET WEIGHT	22 Kg.
UNIT DIMENSION	494 mm (W) × 470 mm (H) × 466 mm (D)

* Design and specifications are subject to change without notice.



SCHEMATIC DIAGRAM



① 3.5V P-P	④ 0.3V P-P	⑦ 100mV P-P	⑩ 0.5V P-P	⑬ 1.3V P-P	⑯ 110mV P-P	
② 3.4V P-P	⑤ 2.0V P-P	⑧ 0.6V P-P	⑪ 5.2V P-P	⑭ 0.3V P-P	⑰ 100V P-P	⑱ 100V

S701-82066C-01

L901 100uH
L903 10uH
C901 .02
C902 .02
L902 100uH
R901 100
C903 .02
SPEAKER 8 OHM

C134
C150 0.02
C136 0.22u
R129 1K
C128 10u
C129 2.2u
C130 4.7u/16V
IC 103 6503-00516A-0C
R127 5K6
R130 1
C133 0.1
R126 220
C131 0.1
C132 1000u/16V

IC 101 6501-00324A-00

R103 56K
C144 0.01
C135 330u/16V
C108 0.22u
R117 2.2K
C110 2.2u
C127 2.2u/50V
R116 6K8
C137 .01
R115 2.2K
R118 .0047
R126 8.2K
C120 68P
L106
C119 .01
R125 1K
CF102
C126 1u/50V
C101 0.47u
R136 33K
C102 0.1u
C103 0.47u
C104 0.47u
BU
VT
BM
AGC
BL
AFC
BM
IF
C141 2u2
uPC574J
D104 1N4148
R108 220
R106 5.6K
R109 820
L102
C106 .01
Q101 2SC2717
C107 .001
SAW101
L103
R107 1K
R110 27
R101 100
L111
L112
R134 5.1K 2W
C143 1u
R113 820K
C109 .01
C111 .01
R114 2.2K
C105 .01
C112 .001
VR101 5KB
R104 120K
C117 10u
C113 .01
C115 .01
C114 .01
C116 .01
VIDEO DET
BIAS CIRCUIT
AFT DET
FM DET
AFT
AUDIO
LIMITER
VIDEO AMP
NOISE INVERTOR
L104
C121 2P
C122 2P
L105
R165 2K2
C123 15P
C124 47P
L109
TP1
R123 1K
L107
R119 330
L108
R120 100
R121 2.2K
CF101
TP13
R124 39 1W

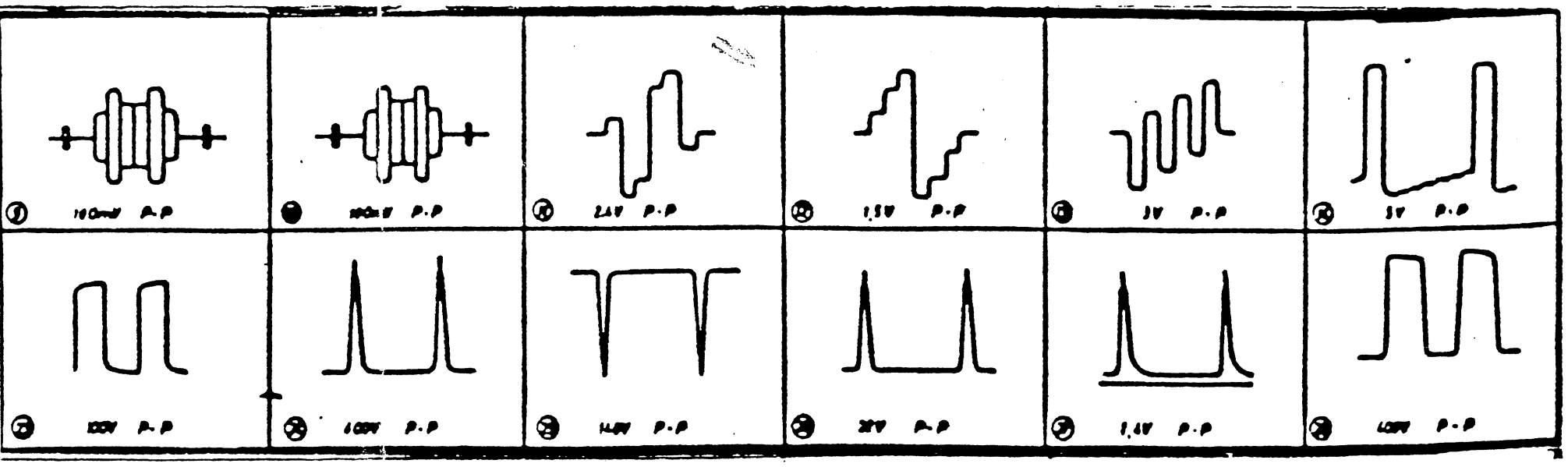
R137 820
R615 10K
R614 39 1W
Q608 2SC2230Y
D103 1N4148
R140 8K2
Q103 2SC1815Y
D102 1N4148
C139 4.7u
R142 39K
C145 0.01
R141 3.3K
R144 10K
D101 1N4148
R121 10K

T601
BA601 BA10G
C602 .0022u/500V
C603 .0022u/500V
C601 .0022u/1KV
R602 4Ω 5W
R601 PTC
L2001
DEGAUSSING COIL
C1202 .47u AC250V
T1201
C1201 .22u AC250V
F1201 T2A
SW1201
AC 250V 50Hz
R603 2.2 2W
R604 330
R605 6.8K
R606 1.8K
R607 8.2K
C606 .033
Q602 2SB772T
R612 12Ω
Q601 2SC1815Y
VR601 1K
R609 10K
Q603 2SC1815Y
R610 6.8K
D605 8.2V
D606 9V
R611 4.7K
D607 S5295G
D608 S5295G
D609 S5295G
C607 10u/50V
C608 0.1
C609 47u/25V
Q604 BU208
R620 0.33 2W
C610 .002 1000V
R623 39 6W
R613 27 2W
R624 5.6M 1/2W
C616 0.0022u/ AC 400V
R621 180K 1/2W
R622 180K 1/2W
C615 680P
D610 S5295G
L604
C611 220u/25V
Q607 2SD400
R619 680
C617 4700P
R618 12
D611 1S1835
C612 220P/1KV
C613 47u/160V
R625 100K 1/2W
Q606 2SC2335
Q605 2SA1013
TP11
R117 2K7

	14"	20"
R304	56K	47K
R305	24K	22K
R309	180K 1/2W	120K 1/2W
R315	3.9Ω 2W	2.2Ω 2W

SERVICE PRECAUTION:
The area enclosed by this line (— — —) is directly connected with AC Main Voltage. When servicing the area, connect an isolating transformer between TV receiver and AC line to eliminate hazard of electric shock.

VR203 10KB
R208 5.6K
VR202 1KB
R207 27K
R205 120K
C203 39P
R203 1K
R204 560
C204 1u
C256 0.04
R211 36K
R202 100K
DL 201
Vcc
PEDESTAL AMP
VIDEO AMP
CONTRAST AMP
INV
C202 15P
L201
R201 82Ω
C229 3u
R231 820
R239 2.4K
C232 1u
D202 1S1555
R232 1.5K
R233
C233
C234 470P
C230 4.7u
D203 1S1555
R234 56 1W
R237 6.8K 2W
R238 680 1/2W
D204 1N4148
C235 10u/16V
D213 1S1555
C231
R235 10K
R236 5.6K
R309
D301 1N4004
C301
R301 820 1/2W
R302 820 1/2W
C302 10u/35V
D302 1S1555
D303 1S1555
C303 200P
Q301 2SC2229-O
Q304 2SC2482
C311 390P/500V
C312 .0022
R310 2.7K 1/2W



5701-B2077A-51

5701-B2077B-00

	14 "	20 "
C316	.0072u/1600V	.0066u/1600V
C309	0.01u/200V	0.015u/200V
C317	0.52u/200V	0.47u/200V
C301	47u/50V	100u/50V
C231	47u/16V	22u/16V
C136	220u/16V	330u/16V